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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

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MINERAL MARKET REPORT
MMS NO. 2043

COPPER IN 1951
(Preliminary Report)

The accelerated United States defense program resulting from the outbreak in 1950 of hostilities in Korea, brought a return in 1951 of the critical copper supply situation that characterized much of the World War II period, according to the Bureau of Mines, United States Department of the Interior; indications were that a more stringent supply-requirements relationship would develop in 1952 when consumption for defense purposes rises to planned levels. Total supply in 1951 was slightly less than in 1950 despite the increase in domestic mine output to the highest level since 1944 and the small rise in production of copper from old scrap to a rate exceeded only in three earlier years - 1945, 1947 and 1948; imports of crude and refined materials were 23 percent less than in 1950 and considerably below the war years in the nineteen forties. Smelter and refinery outputs from domestic ores rose 2 and 3 percent, respectively, but refinery output from domestic and foreign ores was 3 percent lower than in 1950. The price for copper was at the highest level since 1918. Producers' year-end stocks of refined copper rose 42 percent over 1950 but the latter tonnage was the smallest since 1906. Stocks of unrefined copper and of materials in process of refining dropped 19 percent and, except for 1948, were the smallest since 1931.

Continuation of Governmental efforts to assure adequate supplies of copper and other materials for military requirements, and to prevent, insofar as possible, dislocation of the industrial economy, was made possible by extension of the Defense Production Act. Under this Act the Defense Minerals Administration in the Interior Department and its successor, the Defense Materials Procurement Agency, continued efforts to expand production. Copper production, however, did not lend itself to rapid expansion. To solve the problem of filling expanding military and continuing large industrial requirements with static or reduced supplies the National Production Authority reinstituted the Controlled Materials Plan, used effectively in World War II, for copper, steel and aluminum, the three materials covered by that major war device of the earlier period. On July 13 the NPA announced that copper raw materials would be placed under complete allocation control, effective August 1.

Mine output of recoverable copper rose 2 percent in 1951 despite labor strikes that prevented maximum annual production. The almost month-long strike at the American Smelting & Refining Company smelter at Garfield, Utah, in July, interrupted the smelting of concentrates from Utah Copper mine, Bingham, Utah, the largest copper producer in the United States, but in the end may have merely delayed this copper in reaching the market. The widespread strike of mine, mill and smelter workers (beginning in late August and ending early in September when the Taft-Hartley

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Prepared by Helena M. Meyer, Archie J. McDermid, and Gertrude N. Greenspoon, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Act was invoked) adversely affected operations in all major copper-producing States and caused a loss of about 25,000 tons of metal. Smelter and refinery losses due to strikes were even greater, although some of the loss was made up, and some stored crude materials may contribute to slightly higher smelter and refinery outputs early in 1952 than would otherwise be possible.

The crisis caused by the loss in mine and plant production led to the unprecedented release of 25,000 tons of copper from the United States strategic stockpile in August and a subsequent authorization, October 1, for release of an additional 30,000 tons. The stockpile was to be reimbursed for these withdrawals.

A number of properties were certified in 1951 for Government assistance, under provisions of the Defense Production Act, for expansion of copper production at presently operating or idle mines or for maintenance of production that might be lost without such aid. The properties were to receive Government loans, Government purchase contracts, or tax amortization benefits, or combinations of the three types of assistance. The major properties certified for production expansion were the following:

Mine	County	State
San Manuel	Pinal	Arizona
White Pine	Ontanagon	Michigan
Yerington	Lyon	Nevada
Silver Bell	Pima	Arizona
Copper Cities	Gila	do
Bisbee East	Cochise	do
Ruth Mine	White Pine	Nevada
North Butte	Silver Bow	Montana

The loans for the San Manuel and White Pine projects had not been awarded by the end of 1951. Very little new production from the properties listed was expected before late 1953. Rising costs threatened some loss of production from high-cost mines. In December the DMPA moved to prevent such loss by offering to negotiate over-the-ceiling contracts with presently producing high-cost mines. Nine properties were involved in such negotiation at the end of the year.

Copper was one of the commodities for which ceiling prices were established by the General Ceiling Price Regulation, effective January 26. This order set maximum prices at not to exceed the highest prices received by individual producers between December 19, 1950 and January 25, 1951, inclusive. Primary producers in general had been selling electrolytic copper, delivered Connecticut Valley, at 24 1/2 cents a pound, and as a consequence that figure became their ceiling price. There were, however, companies whose ceiling prices were substantially in excess of the 24 1/2 cent figure.

The quoted price for electrolytic copper, delivered Connecticut Valley, remained at 24 1/2 cents a pound throughout 1951, or 13 percent above 1950 and the highest average price since 1918. If the quoted copper price is adjusted according to variations in the Bureau of Labor Statistics wholesale price index, however, the 1951 copper index is found to be below those in 1947, 1940, 1939, 1937, and in most years from 1922-30, inclusive.

Salient statistics of the copper industry in the United States, 1942-46 (average) and 1947-51, in short tons

	1942-46 (average)	1947	1948	1949	1950	1951
New copper produced-						
From domestic ores as reported by -						
Mines..........	905,012	847,563	834,813	752,750	909,343	928,576
Smelters........	913,338	862,872	842,477	757,931	911,352	929,000
Refineries......	894,978	909,213	860,022	695,015	920,748	949,000
From foreign ores, matte, etc., refinery reports.	305,476	250,757	247,424	232,912	319,086	256,000
Total new refined, domestic and foreign..........	1,200,454	1,159,970	1,107,446	927,927	1,239,834	1,205,000
Secondary copper recovered from old scrap only..........	442,980	503,376	505,464	383,548	485,211	496,000
Imports (unmanufactured) 1/........	703,155	413,890	507,449	552,709	690,231	2/456,682
Refined 1/........	396,466	149,478	249,124	275,811	317,050	2/221,205
Exports of metallic copper 3/...........	194,504	196,999	207,022	195,990	192,339	2/147,425
Refined (ingots, bars, etc.)......	4/96,855	147,642	142,598	137,827	144,561	2/117,042
Stocks at end of year................	366,400	273,000	250,000	322,000	258,000	224,000
Refined copper....	91,900	60,000	67,000	61,000	26,000	37,000
Blister and materials in solution.........	274,500	213,000	183,000	261,000	232,000	187,000
Withdrawals from total supply on domestic account-						
Total new copper..	1,484,000	1,286,000	1,214,000	1,072,000	1,447,000	1,309,000
Total old and new copper (old scrap only)......	1,927,000	1,789,000	1,719,000	1,456,000	1,932,000	1,805,000
Price average 5/-- cents per pound.....	12.3	20.9	21.7	19.7	20.8	24.3

1/ Data include copper imported for immediate consumption plus material entering country under bond.

2/ January-November, inclusive

3/ Total exports of copper, exclusive of ore, concentrates, composition metal, and unrefined copper. Exclusive also of "Other manufacturers of copper," for which figures of quantity are not recorded.

4/ Includes rods 1942-45.

5/ Exclusive of bonus payments of the Office of Metals Reserve; Premium Price Plan covered the period February 1, 1942, to June 30, 1947, inclusive.

World demand in 1951, partly because of expanded defense mobilization, was at a sharply accelerated rate and world prices soared. Trustworthy information on prices for copper sold outside the United States, however, is not available. Press statements have called attention to fantastically high prices prevailing in foreign countries. It is known that such prices were paid but there are no data to show that extremely high prices were paid for substantial quantities. There is little doubt, however, that the United States, because of ceiling price restrictions, contrasted with uncontrolled markets on the European Continent, was at a disadvantage in seeking foreign copper. This condition offset in part the long-time advantage resulting from the desire of foreign countries to sell in the United States and to obtain United States dollars.

An agreement between the United States and Chilean Governments in May 1951, provided for the payment of an additional 3 cents a pound over the ceiling for Chilean copper sold in the United States. The agreement called for expansion in Chile's production, for Chile's discontinuance of abnormal trade in semi-processed copper, for the withholding by Chile of not in excess of 20 percent of production of American companies operating in Chile, and for Chile's prevention of the exportation of copper to countries of the Soviet bloc.

The Office of Price Stabilization announced that effective July 25, the ceiling price for copper refined in the United States from imported crude materials was 27½ cents a pound delivered Connecticut Valley. The increased cost of foreign copper was not to be passed on to customers by the fabricators.

Trading in copper, lead, and zinc on the Commodity Exchange was terminated July 27, as a result of the restricting effects of the general price ceiling regulation, and upon virtual liquidation of outstanding contracts.

The 2-cent copper excise tax was suspended from April 1, 1951 to February 15, 1953, or to the termination of the National Emergency, whichever is first, by a law signed by the President in May.

Price changes for electrolytic copper in the United Kingdom in 1951 were: An increase of £ 8 per long ton to £ 210 (equivalent at $2.80 to 26.25 cents a pound) in April, a further increase of £ 24 to £ 234 (equivalent to 29.25 cents a pound) in May, and a drop of £ 7 to £ 227 (28.37½ cents) in September.

The world shortage of copper in 1951 led to the placing of copper under international allocation (free world countries). Quotas were established by the International Materials Conference for the fourth quarter of 1951. The member countries were restricted as to quantities consumed but not as to where such quantities were to be obtained. Chile insisted on the right to withhold the copper retained by that Government under agreement with the United States State Department, already mentioned, from international agreement. Member countries agreed not to dispose of copper to countries in the Soviet bloc.

Inability to increase imports in 1951, or even to maintain them at 1950 levels, was a major disappointment to defense officials trying to stretch supplies to meet expanding needs. Total imports, including scrap, for 11 months of the year fell 27 percent, the unrefined classes - ores, matte, and blister - dropping 21 percent and the refined class 24 percent. All of the chief suppliers in 1950 sent smaller quantities to the United States in 1951: Canada dropped 37 percent, Mexico 23 percent, Chile 3 percent, and Peru 61 percent. Receipts of unrefined copper from Northern Rhodesia were cut in half and the unusual imports of refined copper from Japan in 1950 were virtually discontinued in 1951.

Exports of refined copper in 1951 were substantially less than the relatively low rates of recent years.

Production. - The following three tables include 1951 figures covering 11 months' actual figures plus company estimates for December.

Mine production of recoverable copper in the United States, 1942-46 (average) and 1947-51, in short tons

Year	Short tons	Year	Short tons
1942-46 (average)	905,012	1949	752,750
1947	847,563	1950	909,343
1948	834,813	1951	928,576

Copper produced by smelters from domestic ores, 1942-46 (average) and 1947-51, in short tons

1942-46 (average)	913,338
1947	862,872
1948	842,477
1949	757,931
1950	911,352
1951	929,000

The estimated smelter production for December amounted to 79,000 tons or an increase of 3 percent over the average for the preceding 11 months. The total for the year was 2 percent more than in 1950.

Refinery production of new copper from domestic sources increased 3 percent in 1951 but that from foreign sources decreased 20 percent as compared with 1950.

Refined copper produced at primary plants from domestic and foreign ores and from secondary material, 1942-46 (average) and 1947-51, in short tons

Year	Domestic ores	Foreign ores	Total new copper	Secondary	
				New	Old
1942-46 (average)	894,978	305,476	1,200,454	1/ 99,248	
1947	909,213	250,757	1,159,970	134,248	134,837
1948	860,022	247,424	1,107,446	115,710	129,666
1949	695,015	232,912	927,927	81,693	130,699
1950	920,748	319,086	1,239,834	89,360	100,386
1951	949,000	256,000	1,205,000	84,000	53,000

1/ Breakdown of new and old scrap not available.

Total output of secondary copper is shown in the accompanying table. Production from scrap was virtually unchanged from 1950 compared with a decrease of 3 percent in output from primary materials.

Of the total of 1,342,000 tons of primary and secondary copper produced at primary refineries in 1951 (1,429,580 tons in 1950), 1,219,000 tons were electrolytic (1,313,952 tons in 1950) and 123,000 tons (115,628 in 1950) were Lake or other fire refined.

Secondary copper produced in the United States, 1947-51, in short tons

	1947	1948	1949	1950	1951
Copper recovered as unalloyed copper--	303,092	284,026	250,089	260,704	189,000
Copper recovered in alloys 1/---------	658,649	688,762	463,054	716,535	786,000
Total secondary copper-------------	961,741	972,788	713,143	977,239	975,000
From new scrap-------------------	458,365	467,324	329,595	492,028	479,000
From old scrap-------------------	503,376	505,464	383,548	485,211	496,000

1/ Includes copper in chemicals, as follows: 1947, 18,838; 1948, 17,612; 1949, 14,840; 1950, 17,413; 1951, not available.

Foreign trade. - Statistics on imports and exports are compiled from records of the Department of Commerce. Figures for 11 months make it appear that the annual import total for 1951 will be 28 percent less than in 1950. Refined imports made up nearly half of the total and came largely from Chile and Canada. Exports are shown first for better space utilization.

Refined copper was likewise by far the chief export classification. Shipments in 1951 went mainly to the United Kingdom, France, Germany, Italy, and the Netherlands.

Exports of copper in bars, ingots, etc., by principal countries of destination, in short tons, are given in the following table.

	January-November			January-November	
	1950	1951		1950	1951
Argentina--------------	110	1,276	Italy-----------------	15,098	7,948
Austria----------------	192	548	Netherlands-----------	5,900	7,291
Belgium and Luxembourg-	18	280	Norway----------------	2,881	1,791
Brazil-----------------	1,252	3,381	Pakistan--------------	112	-----
Denmark----------------	1,982	1,372	Sweden----------------	2,015	342
France-----------------	16,529	16,406	Switzerland-----------	5,040	5,359
Germany----------------	3,217	8,348	United Kingdom--------	62,108	60,779
Greece-----------------	309	637	Other-----------------	1,697	1,100
India------------------	8,429	184		126,889	117,042

Exports of the other classes of copper in the first 11 months of 1950 and 1951, in short tons, are given in the following table.

	1950	1951
Ore, concentrates, etc. (copper content)---------	598	234
Old and scrap------------------------------------	16,234	7,560
Pipes and tubes----------------------------------	1,778	1,917
Plates, sheets and strips------------------------	546	534
Rods---	8,046	509
Wire: Bare---------------------------------------	6,436	7,521

Copper (unmanufactured) imported into the United States in January-November 1950 and 1951, by countries, in short tons (general imports)

	Ore (copper content)	Concentrates (copper content)	Regulus, black or coarse copper (copper content)	Unrefined black blister and converter in pigs or converter bars	Refined in ingots, plates or bars	Old and clippings for remanufacture
1950						
Bolivia..............	292	4,206	9	....	....	....
Canada and Newfoundland................	124	22,156	907	....	49,316	4,359
Chile................	837	9,500	315	54,360	193,149	49
Cuba.................	18	19,536	....	....	....	415
Japan................	....	....	274	440	26,714	26,081
Malta, Gozo, etc......	....	1/6,530	....	....	....	....
Mexico...............	23	8,097	86	45,291	4,559	29
Northern Rhodesia 2/..	....	207	....	75,364	....	....
Peru.................	611	5,086	905	5,790	14,427	....
Philippines, Republic of..........	(3)	3/7,574	....	....	....	125
Union of South Africa.	36	4,648	10	3,276	....	57
Yugoslavia...........	....	....	....	9,076	....	13
Other countries.......	475	1,105	377	3,962	4,780	6,458
	3/2,416	3/88,645	2,883	197,559	292,945	37,586
1951						
Bolivia..............	219	4,230	....	....	....	....
Canada and Newfoundland................	26	22,202	644	110	24,542	664
Chile................	1,316	9,874	8	44,901	194,764	633
Cuba.................	48	19,845	....	....	....	407
Japan................	....	....	....	521	632	756
Malta, Gozo, etc.....	....	5,556	....	....	....	....
Mexico...............	143	6,097	1,889	35,867	702	88
Northern Rhodesia 2/.	....	....	....	2/41,486	....	....
Peru.................	1,487	6,533	331	1,885	377	1
Philippines, Republic of.........	(3)	3/10,423	....	....	....	....
Union of South Africa	....	3,619	....	3,698	....	8
Yugoslavia...........	....	....	....	6,223	....	....
Other countries......	16	849	....	109	188	2,765
	3/3,255	3/89,228	2,872	134,800	221,205	5,322

1/ Cyprus.

2/ Includes copper credited in Commerce records to Southern Rhodesia.

3/ Some copper in "ore" and "other" from Republic of Philippines is not separately classified and is included under "concentrates."

Stocks. - Estimated stocks of refined copper in producers' hands increased 42 percent in 1951 over the low tonnage of 26,000 tons in 1950, or to 37,000 tons. Stocks of blister at smelters, in transit to refineries, and of unrefined material at refineries, decreased 19 percent, and, although 2 percent more than 1948, were low in relation to other recent years.

Stocks of copper at primary smelting and refining plants
at end of the year, 1947-51, in short tons

Year	Refined copper	Blister and unfinished materials
1947	60,000	213,000
1948	67,000	183,000
1949	61,000	261,000
1950	26,000	232,000
1951	37,000	187,000

Apparent consumption of new copper. - Preliminary figures indicate that 10 percent less new copper entered into consumption channels (including the National Strategic Stockpile) in 1951 than in 1950. The method of calculation of apparent consumption is shown as follows:

New refined copper withdrawn from total year's supply
on domestic account, 1950-51, in short tons

	1950	1951
Refinery production of new copper from domestic sources	920,748	949,000
Refinery production of new copper from foreign sources	319,086	256,000
	1,239,834	1,205,000
Imports of refined copper (Dec. 1951 estimated)	317,050	240,000
Total new refined	1,556,884	1,445,000
Stocks of new refined copper on January 1	61,000	26,000
Total supply	1,617,884	1,471,000
Exports of refined copper (ingots, bars, or other forms)(December 1951 estimated)	144,561	125,000
Stocks December 31	26,000	37,000
	170,561	152,000
Total withdrawn on domestic account 1/	1,447,000	1,309,000

1/ Includes copper delivered by industry to the National Stockpile.

Prices. - The General Ceiling Price Regulation, effective January 26 is discussed in the summary statement of this report. Quoted prices for electrolytic copper, delivered Connecticut Valley, continued at 24.5 cents a pound throughout the year.

The excise tax on copper which became effective again on July 1, 1950, was again suspended from April 1, 1951 to February 15, 1953, or to the termination of the National Emergency, whichever comes first.

The price of export copper, f.o.b. refinery, was approximately 0.225 cent a pound above the domestic quotation until May when the agreement with Chile was reached, raising the price 3 cents a pound for Chilean production. After June the differential was 3.225 cents a pound for the remainder of the year.

Average yearly quoted prices of electrolytic copper for domestic and export shipments, f.o.b. refineries, in the United States, 1947-51, in cents per pound

Period	Domestic f.o.b. refinery 1/	Domestic f.o.b. refinery 2/	Export f.o.b. refinery 2/
1947	21.15	20.958	21.624
1948	22.20	22.038	22.348
1949	19.36	19.202	19.421
1950	21.46	21.235	21.549
1951	24.38	24.200	26.258

1/ As reported by American Metal Market.
2/ As reported by E&MJ Metal and Mineral Markets.

Interior, Duplicating Section - Washington, D. C.

Prepared 1/18/52.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

Oscar L. Chapman, Secretary J. J. Forbes, Director

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MINERAL MARKET REPORTS
MMS NO. 2044

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TITANIUM IN 1951
(Preliminary)

Titanium metal was produced commercially on a record breaking tonnage scale by two companies in 1951, according to the Bureau of Mines, United States Department of the Interior. Several new groups were organized for promoting the production and use of titanium metal. New records were also established for the production of ilmenite and titanium pigments.

Titanium Metal. - Production of titanium sponge in 1951 is estimated at 700 tons coming from plants operated by E. I. DuPont de Nemours at Newport, Delaware; Titanium Metals Corporation of America at Sayreville, New Jersey; Niagara Falls, New York; Henderson, Nevada; and leased facilities at Boulder City, Nevada; and the Crane Company at Chicago, Illinois. Titanium sponge was produced at the end of 1951 at the rate of about 1,400 tons per year.

DuPont began operating a commercial plant in May with a nominal capacity of two tons of titanium sponge per day. The production rate originally estimated was reached in the latter part of 1951. DuPont plans to reach an expected capacity of 2 1/2 tons per day at this plant in 1952. At the request of the Government, the General Services Administration was negotiating with DuPont for additional expansion in 1952.

The Titanium Metals Corporation of America, jointly owned by National Lead Company and Allegheny Ludlum Steel Corporation, signed a letter of intent in August, 1951 for construction and operation of a plant at Henderson, Nevada, to produce 3,600 tons of titanium per year for five years. An advance of $15,000,000 was made to the Titanium Metals Corporation. This advance, plus interest of four percent per annum on the unpaid balance, is repayable either in dollars or in titanium metal. Titanium sponge acceptable to the Government shall have the following specifications: Titanium content - 99.3 percent minimum, total maximum impurities - 0.7 percent, iron - 0.25 maximum, nitrogen - 0.03 percent maximum, chlorides to be established based on operating and storage experience, and hardness after arc melting in an inert atmosphere less than 250 Vickers or 61 Rockwell A. The site of the new operation is the former Basic Magnesium, Inc., plant at Henderson, Nevada, built by the Government during World War II. Major components of this plant were leased from the state of Nevada. Power is to be allocated from Hoover and Davis Dams, up to a maximum of 151,000,000 kilowatt-hours, by the Colorado River Commission from the quota allotted to the state of Nevada. The Henderson plant is the first fully integrated titanium plant with facilities for chlorination of titanium ore and recovery of magnesium and chlorine by electrolysis of magnesium chloride. Initial operation at the Henderson plant began in September and routine production started

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Prepared by F. J. Cservenyak, under supervision of H. W. St. Clair, Chief, Light Metals Branch, Minerals Division.

in October. Production of two tons per day was reached at the end of 1951 and capacity production of 10 tons per day was expected in the third quarter of 1952.

The National Research Corporation of Cambridge, Massachusetts, and Monsa[illegible] Chemical Company joined forces to develop an improved process for the production of titanium. Work already in process by National Research was expanded and additional work was initiated by Monsanto's research department at Dayton, Ohio. P. R. Mallory and Company and the Sharon Steel Corporation formed the Mallory-Sharon Titanium Corporation for the development, production and marketing of titanium and titanium alloys. A new process for producing titanium metal was under investigation by Horizons Titanium Corporation, a new firm formed by Horizons, Inc., of Princeton, New Jersey, with the backing of Ferro, Inc., of Cleveland, Ohio, and others. The process developed by Horizons, Inc., under the sponsorship of the Office of Naval Research, had advanced to the pilot plant stage at the end of the year.

Ilmenite. - Domestic output of ilmenite in 1951 was 488,600 short tons. Shipments totaled 480,000 tons and were six percent higher than in 1950. Totals for the years 1947 - 1951 are as follows:

Ilmenite Concentrates Produced and Shipped in the United States in 1947-1951, in short tons.

Year	Produced	Shipped
1947	336,533	336,061
1948	383,745	381,508
1949	402,334	389,234
1950 1/	468,320	452,370
1951 1/	488,600	480,000

1/ Includes a mixed product containing altered ilmenite, leucoxene and rutile.

Increased production over 1950 was reported at the DuPont property in Starke, Florida; Florida Ore Processing Company at Melbourne, Florida; Yadkin Mica and Ilmenite Company at Finley, North Carolina; and American Cyanamid Company at Piney River, Virginia. National Lead's Tahawas, New York, property continued as the world's largest ilmenite producer. Ilmenite was also produced at the Jacksonville, Florida, property of the Rutile Mining Company of Florida.

The Quebec Iron and Titanium Corporation, formed jointly by Kennecott Copper Corporation and New Jersey Zinc Company, completed the first full season of mining at the Allard Lake, Quebec, ilmenite mine. A total of 340,000 gross tons of ilmenite ore was shipped in 1951 from the Allard Lake mine to the smelter at Sorel. It was reported that one furnace was in operation at the smelter producing about 135 tons of titanium dioxide slag and 100 tons of pig iron per day at the end of 1951.

Imports of ilmenite for January - November, inclusive, were 188,239 short tons, a slight increase over the 185,524 tons received in the first 11 months of 1950. India continued to dominate the suppliers; 3,000 tons of ilmenite, including titanium slag, were imported from Canada, and Australia supplied 100 tons of ilmeni[illegible] during this period.

Quotations per gross ton for ilmenite, containing 56 to 59 percent TiO_2, f.o.b., Atlantic seaboard were \$14 - \$16 at the beginning of 1951 and increased to \$15 - \$17 in January, and \$16 - \$18 in February, at which level they remained for the rest of the year. All quotations were nominal.

Rutile. - Domestic production of rutile in 1951 decreased slightly under 1950. Rutile was produced by the Rutile Mining Company of Florida at Jacksonville, Florida, and the Florida Ore Processing Company at Melbourne, Florida.

Imports of rutile from Australia, the sole supplier since 1947, were reported at 10,746 short tons in the first 11 months, an increase of 7,545 tons over receipts in the same period of 1950.

Rutile was reported to be in short supply during the latter part of 1951. Increased consumption of rutile was mainly in welding rod coatings, alloys and titanium metal.

Nominal quotations for rutile, guaranteed minimum 94 percent concentrate, were 3 1/2 - 4 1/2 c. per pound until the end of November when they increased to 5 1/4 - 6 1/4 c. per pound. Rutile was under coverage of General Ceiling Price Regulation, January 26, 1951, which established ceiling prices upon the basis of prices in effect during the base period, December 19, 1950 to January 25, 1951. The year closed with a ceiling price for rutile concentrate averaging about \$100 per ton at East Coast ports.

12330 Interior - Duplicating Section, Wash. D.C.

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MINERAL MARKET REPORT MMS NO. 2045
(Replaces November and December
Monthly reports 126 and 127)

MINE PRODUCTION OF COPPER IN THE UNITED STATES IN 1951 - PRELIMINARY ANNUAL FIGURES

Output of recoverable copper by mines in the United States rose 2 percent in 1951 to 929,000 tons or to the highest level since 1944, according to the Bureau of Mines, United States Department of the Interior. Widespread strikes of mine, mill and smelter workers in late August and early September were the chief deterrents to even larger production, but miscellaneous other causes prevented the achievement of maximum possible tonnages. In the first six months of the year, 480,000 tons were produced indicating that under continuing favorable conditions the total output in 1951 might have been 960,000 tons.

Among the major copper-producing States Arizona rose 3 percent, New Mexico 10, Nevada 7 and Montana 2, while Utah dropped 2 percent. In States east of the Mississippi a decline in production in Michigan was offset by increases elsewhere in the area. Other than the foregoing the outstanding change in 1951 was the decrease of 17 percent in production in Washington.

Factors that affected the copper industry in 1951 were discussed in MMS 2043 recently published.

This report which summarizes mine output for 1951 is part of the regular monthly copper mine production series. As preliminary figures for November and estimates for December are included, the report serves for both these months and the next issue will be for January 1952. The following table and State reviews for 1951, were obtained from current preliminary reports of the regional offices of the Bureau of Mines, a procedure followed in the preparation of all the reports in the series. The figures are given in terms of recoverable copper content of ores and concentrates.

Arizona. - Output of copper in Arizona in 1951 again was well above all other States and this State established a new all-time record, by a slight margin only over the previous record for 1929. Production in 1951 was chiefly from the Morenci, New Cornelia, Kennecott (Ray Mines), Inspiration, Copper Queen, Miami, Castle Dome, Magma, United Verde, and Bagdad mines. Production of the Copper Queen and Ray Mines increased 30,000 tons (61 percent) and there were outstanding increases also at the Miami and Castle Dome properties. Marked decreases, however, were noted at the Morenci, United Verde, Magma, New Cornelia, and Bagdad mines.

Prepared by Helena M. Meyer and Gertrude N. Greenspoon under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

The Copper Mountain (Morenci) remained by far the chief copper-producing district with 144,300 tons (154,689 in 1950). Other districts, in order of importance, with 1950 data in parentheses, had outputs as follows: Globe (Inspiration-Miami) 90,500 (84,688 in 1950), Ajo 61,725 (64,400), Mineral Creek (Ray) 50,600 (36,442), and the Warren (Bisbee) 29,250 (13,345). Output of the Pioneer (Superior) district droppe[illegible] from 22,636 in 1950 to 17,800 tons, that of the Verde (Jerome) from 13,291 to 9,500, and that of the Eureka (Bagdad) from 10,673 to 9,150 tons.

Total copper ore production increased from 41,757,273 tons in 1950 to 42,850,000 tons in 1951. The six open-pits -- Ajo, Bagdad, Inspiration, Miami (Castle Dome), Morenci, and Ray -- produced about 34,300,000 tons of copper ore in 1951 compared with 33,358,059 tons in 1950.

California. - A large percentage of California's relatively small copper production is recovered incidental to the outputs of other base metals.

Colorado. - There was a small rise in Colorado's copper production in 1951. The Treasury Tunnel - Black Bear group was the only substantial producer of copper in the State.

Eastern States. - Copper was produced by the Bethlehem Steel Co. from the Cornwall mine in Pennsylvania, by the Tennessee Copper Co. from its Tennessee mines, and by the Vermont Copper Co. from the Elizabeth mine. These companies produced 16,208 tons in 1951 compared with 14,497 tons in 1950, or an increase of 12 percent.

Michigan. - Output decreased 4 percent in 1951. Virtually all of the copper was from operations of the Calumet and Hecla Consolidated Copper Co., Copper Range Co., and Quincy Mining Co.

Montana. - In recent years New Mexico has displaced Montana as the third most important copper-producing State, and in 1951 Montana fell behind Nevada into fifth place. The starting of production at the Greater Butte project, beginning about April 1952, is expected to cause a noteworthy increase in Montana's production in 1952.

Nevada. - Production rose 7 percent in 1951 to the highest level since 1944. The Kennecott Copper Corp. (Nevada Mines Division) and Consolidated Coppermines Corp., operating the Ruth pit and extension, Robinson district, White Pine County, and the Consolidated Coppermines Corp. operating its new Morris Brooks pit in the same district, accounted for a preponderant percentage of Nevada's output.

New Mexico. - New Mexico had the largest increase in copper production among the important copper-producing States, or 10 percent. Output in 1951 was the largest since 1948. The Chino open-pit of the Kennecott Copper Corp., Chino Mines Division, at Santa Rita, overwhelmingly the largest copper producer in the State, operated 7 days a week throughout 1951 except for a 2-weeks' shutdown in August-September. Near Lordsburg the Banner Mining Co. operated its Bonney-Miser's Chest mine and other copper mines were active in scattered areas.

Total output of copper ore in 1951 was about 8,010,000 tons.

Utah. - Utah regularly ranks second among copper-producing States, with substantial tonnage differences between the output of this State and Arizona and New Mexico, ranking first and third, respectively. Most of Utah's copper is recovered from copper ore mined from the Utah Copper open-pit at Bingham, of the Kennecott Copper Corp., which is the leading copper-producing mine in the United States by a wide margin. Among other Utah properties, only the United States & Lark group at Bingham produced more than a million pounds of recoverable copper in 1951. These two producers contributed more than 99 percent of the State's total.

Washington. - The drop in output in Washington in 1951 was due to a mine flood of sand and water, April 5, at the Holden mine of the Howe Sound Co., resulting in suspension of operations. Milling was resumed on a one-shift basis April 19.

Mine production of recoverable copper in the United States
1947-51, by States, in short tons

Region and State	1947	1948	1949	1950	1951
States east of the Mississippi:					
Michigan.........	24,184	27,777	19,506	25,608	24,580
Other............	12,691	14,248	13,449	14,497	16,208
	36,875	42,025	32,955	40,105	40,788
Missouri............	1,760	2,370	3,670	2,982	1,845
Western States:					
Arizona...........	366,218	375,121	359,010	403,301	417,000
California........	2,407	481	649	646	830
Colorado..........	2,150	2,298	2,403	3,141	3,230
Idaho.............	1,640	1,624	1,438	2,107	1,972
Montana...........	57,900	58,252	56,611	54,478	55,613
Nevada............	49,603	45,242	38,058	52,569	56,310
New Mexico........	60,205	74,687	55,388	66,300	73,100
Oregon............	14	2	20	19	11
Texas.............	6	23	24	2	1
Utah..............	266,533	227,007	197,245	278,630	273,700
Washington........	2,240	5,665	5,275	5,057	4,175
	808,916	790,402	716,121	866,250	885,942
Alaska..............	12	16	4	6	1
Total United States..	847,563	834,813	752,750	909,343	928,576

Mine production of recoverable copper in the United States in 1951, by months 1/, in short tons

Region and State	January	February	March	April	May	June	July	August	September	October	November	December	Total
States east of the Mississippi:													
Michigan........	1,929	1,994	2,464	2,088	2,020	2,037	1,911	2,436	1,855	2,095	1,956	1,795	24,580
Other...........	1,250	1,043	1,364	1,454	1,342	1,378	1,259	1,363	1,385	1,487	1,435	1,448	16,208
	3,179	3,037	3,828	3,542	3,362	3,415	3,170	3,799	3,240	3,582	3,391	3,243	40,788
Missouri..........	176	167	228	125	55	153	152	169	140	173	157	150	1,845
Western States:													
Arizona........	37,155	32,840	38,050	38,260	37,860	31,980	33,600	31,255	30,550	36,400	33,850	35,200	417,000
California.....	100	70	70	70	70	50	60	100	50	60	70	60	830
Colorado.......	337	265	378	294	272	282	249	243	260	210	210	230	3,230
Idaho..........	184	189	190	190	191	153	141	123	136	149	161	165	1,972
Montana........	5,404	4,665	5,611	5,270	5,365	5,152	4,310	3,362	3,603	4,310	4,096	4,465	55,613
Nevada.........	4,660	4,520	5,050	5,230	5,260	4,350	3,890	3,820	4,080	5,220	5,260	4,970	56,310
New Mexico.....	6,358	6,057	5,930	6,158	6,922	6,378	6,281	4,559	4,744	6,649	6,576	6,488	73,100
Oregon.........	-	-	-	-	-	6	2	2	1	-	-	-	11
Texas..........	-	-	-	-	-	-	-	-	-	1	-	-	1
Utah...........	22,500	20,955	23,435	23,215	24,155	23,575	23,200	20,180	21,965	23,840	23,000	23,680	273,700
Washington.....	373	318	401	105	267	353	352	327	220	420	523	516	4,175
	77,071	69,879	79,115	78,792	80,362	72,279	72,085	63,971	65,609	77,259	73,746	75,774	885,942
Alaska 2/.........	-	1	-	-	-	-	-	-	-	-	-	-	1
Total United States...........	80,426	73,084	83,171	82,459	83,779	75,847	75,407	67,939	68,989	81,014	77,294	79,167	928,576

1/ Revised figures.
2/ Alaska monthly totals based on smelter receipts.

12273 Interior Duplicating Section, Washington, D. C.

Prepared 1/22/[illegible]

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Oscar L. Chapman, Secretary — J. J. Forbes, Director

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MINERAL MARKET REPORTS
MMS NO. 2046

ALUMINUM AND BAUXITE IN 1951
(Preliminary)

The supply of aluminum in 1951 fell far short of the demand even though the production of primary aluminum increased throughout the year and the recovery of aluminum from scrap was 26,000 tons more than in 1950, according to the Bureau of Mines, United States Department of the Interior. Domestic production and imports of bauxite increased. Imports of aluminum slumped far below the 1950 level and the recovery of secondary aluminum from scrap was retarded during the last half of the year because of the price ceilings placed on scrap and secondary ingot.

The aluminum and bauxite industries were making rapid progress in carrying out the expansion program formulated in 1950. A redetermination of aluminum requirements indicated that the first expansion program would be insufficient. A second expansion program was formulated which would increase the annual capacity by 667,000 tons instead of 446,000 tons as originally planned. At the close of the year a third expansion program was in the discussion stage. Most of the increased bauxite requirements for the expansion programs were to be obtained from new mines in Jamaica and by increased domestic production, especially of high silica bauxites.

ALUMINUM

Domestic production of primary aluminum in 1951 was approximately 836,900 short tons. This was an increase of 16 percent over 1950 but fell short of the production expected at the start of the year by about 7,000 tons. Increased production was accomplished in each succeeding quarter; production in the first quarter was 200,700 tons and 217,400 tons in the fourth quarter. About 12,600 tons of production was lost because of strikes and power shortages. Two strikes, one at Reynolds' Listerhill plant in May, and a second at Reynolds' Troutdale plant in December caused production losses estimated at 8,200 tons. Other losses occurred as a result of a power interruption in the Pacific Northwest during the low water period in September. Full power was returned to the Pacific Northwest reduction plants on October 1, but capacity production was not attained until November.

Prepared by D. D. Blue and H. F. Kurtz, under the supervision of H. W. St. Clair, Chief, Light Metals Branch, Minerals Division.

Production of Primary Aluminum in the United States
1949-1951 by Quarters - (Short Tons)

	1949	1950	1951 1/
1st Quarter	157,957	161,213	200,716
2nd Quarter	165,169	180,353	202,875
3rd Quarter	157,520	185,973	215,943
4th Quarter	122,816	191,088	217,351
Total	603,462	718,627 2/	836,885

1/ Preliminary figures.
2/ Corrected total for 1950, 718,622 tons.

Most of the 1951 increase was realized from reduction facilities at Badin, North Carolina; Massena, New York; Alcoa, Tennessee; and Listerhill, Alabama, which were being operated using high-cost electric power. Power costs above five mills per KWH were offset by Government subsidy. Increased production from established facilities and from facilities constructed under the Government programmed expansion accounted for the remainder of the increase.

The new facilities that were put into operation in 1950 were a seventh potline at Kaiser's Spokane plant in March with an annual capacity of 20,000 tons; an additional potline at Reynolds' Jones Mills plant in July with an annual capacity of 23,000 tons; and the first potline of Kaiser's four-potline 100,000 ton capacity plant at Chalmette in December. The capacity of Reynolds' Troutdale plant was increased 2,000 tons per year.

At the beginning of 1951 an expansion program for the aluminum industry totaling 446,000 tons of annual capacity had been established. Under this program the three established producers were to supply 320,000 tons, and new producers 126,000 tons. During the year, military requirements increased and it became necessary to increase the Government-planned expansion. In addition, difficulties were encountered by independent producers that had planned to enter the industry; one company withdrew from the program pending further study and a second company found it impossible to raise the necessary capital. It became necessary to reassign the projected capacity to speed up the expansion. At the end of 1951 the planned and allocated expansion totaled 677,000 tons distributed as follows: 205,000 tons by Aluminum Company of America, 180,000 tons by Reynolds Metals Company, 220,000 tons by Kaiser Aluminum and Chemical Corporation and 72,000 tons by a new producer, Anaconda Copper Corporation-Harvey Machine Company combination.

The decision to increase the number of air force groups resulted in still larger requirement forecasts for aluminum. At the end of 1951 new requirement figures were being studied by the Defense Production Administration, and a third expansion program was in the discussion stage.

The domestic production of secondary aluminum was about 270,000 tons in 1951, an increase of 26,000 tons or 11 percent over the 1950 production. Recovery from old scrap declined in 1951. During the first half of 1951 secondary production was maintained at a rate of more than 300,000 tons per year. On June 29, the Office of Price Stabilization issued Ceiling Price Regulation 54 "Aluminum Scrap and Secondary Ingot" which established price ceilings for the various types of aluminum scrap and for aluminum ingot produced from scrap. This order decreased the price of scrap by more than 50 percent and the price of secondary ingot by 37 percent. The order allowed deliveries of scrap until July 14, and delivery of ingot until August 23, at pre-ceiling prices to permit disposal of stocks purchased on contracts entered into before June 29. Premium prices were allowed for large tonnage deliveries. An immediate depression in scrap consumption and secondary ingot production occurred on the effective dates of the ceiling prices. Secondary aluminum recovery in the fourth quarter was only about 60 percent of the recovery in each of the first two quarters.

The apparent consumption of primary aluminum in 1951 was 962,000 tons as computed by adding primary production and net imports of ingot, slab, sheet, bars, etc., and adjusting for producers stock changes. Aluminum recovered from domestic scrap totaled about 270,000 tons, and imports of scrap are estimated at 15,500 tons. The apparent consumption for 1951 is actually an inflated figure as some of the primary production was absorbed in the National Stockpile. Stocks held by primary producers decreased 8,500 tons during the year and totaled 8,100 tons on December 31. These stocks represented less than four days production. The demand for aluminum was much greater than the metal supply and the consumption of aluminum by the various consumers was controlled by a system of allocations administered by the National Production Authority. The amount and the grades of aluminum which could be used by various industries and in specified products was subject to change throughout 1951. To meet the requirements of the military and essential civilian users, aluminum intended for the stockpile was diverted to industry during the fourth quarter. In December metal was withdrawn from the stockpile for industry consumption.

The aircraft industry received a larger proportion of the aluminum supply than in any post-war year. Because of the large planned expansion of aluminum production capacity and the limited expansion in the copper industry a number of possibilities were being studied for substitution of aluminum for copper. These studies revealed that substantial savings in copper consumption could be realized in the electrical and automotive fields.

The base price of primary aluminum ingot, 99 plus percent pure, was maintained at 19 cents per pound, f.o.b., shipping point, throughout the year. The average price for seven types of secondary ingot declined from a high of 32.8 cents per pound in June to 20.6 cents per pound under Ceiling Price Regulation 54.

Foreign trade in aluminum, both exports and imports, decreased in 1951. Imports of pig and ingot were about 123,000 tons, a decrease of 30 percent from 1950. Imports from Canada accounted for 86 percent of the total. In November, the United States entered into a trade agreement with the United Kingdom which provided for 11,000 tons of Canadian aluminum to be diverted from the United Kingdom to the United States. Deliveries were to be made at the rate of 2,200 tons per month starting in December. Imports of scrap metal in 1951 totaled about 16,000 tons, less than one-fourth of 1950 scrap imports. The major exporters of scrap to the United States in order of importance were Canada, Japan and the United Kingdom. Imports of semifabricated aluminum increased from 11,000 tons in 1950 to 19,000 tons in 1951.

Exports of aluminum pig and alloy increased from 662 tons in 1950 to an estimated 800 tons in 1951. Scrap exports were 1,500 tons, almost double those of 1950. Exported scrap was of a much lower grade than imported scrap being mostly borings, turnings, etc., with an average value of 4.5 cents per pound; imports were largely scrap pig valued at approximately 14 cents per pound. The United Kingdom received 96 percent of the exported scrap. Exports of semifabricated aluminum decreased 44 percent to 11,000 tons.

BAUXITE

During 1951 the bauxite industry was undergoing a major expansion to meet the increasing requirements of the domestic aluminum industry. As calculated from the production of primary aluminum, approximately 3,350,000 tons of ore were consu[illegible] in the production of aluminum, which usually accounts for about 85 percent of the total consumption. The consumption of bauxite by the abrasive, chemical, refractory, and other industries also increased over the 1950 total figure of 442,000 tons.

Based on data for the first three quarters of 1951, domestic bauxite production was estimated at 1,800,000 long tons (dry basis) for the year. The average rate of production for 1951 was exceeded only during the critical war years, 1942 to 1944, when imports were partially cut off at a time of great demand. More than 98 percent was mined in Arkansas, and the remainder in Alabama and Georgia. General imports were expected to reach a record high level, totaling approximately 2,900,000 long tons (as shipped basis). Surinam shipped about 83 percent of the imports, Indonesia 12 percent, and British Guiana 5 percent. Exports of bauxite totaled about 70,000 long tons (as shipped) in 1951. The increase largely reflected greater shipments to the Canadian side of Niagara Falls for the production of crude abrasives which were returned to the United States for final manufacture and consumption. Exports of bauxite concentrates and alumina were estimated at 15,000 tons.

In July the issuance of an amendment to Mineral Order No. 5, included bauxite among the minerals for which exploration loans might be granted. Metal-grade and refractory-grade bauxite were among the commodities on the purchase list for the National Stockpile at the end of 1951.

In addition to the expansion of bauxite output in the United States, the Aluminum Company of America was increasing its facilities in Surinam, and the Kaiser Aluminum and Chemical Corporation and Reynolds Metals Company were developing new projects in Jamaica. Although there was no significant mining at either of the Jamaica operations in 1951, production was forecast for 1952. Installation of additional calcining facilities were planned for Surinam and also by Aluminum, Ltd., for British Guiana.

Alcoa was expanding its Bayer alumina plants at both Mobile, Alabama, and East St. Louis, Illinois, in 1951. Also, Alcoa initiated construction of a new alumina plant at Bauxite, Arkansas, which is designed to use the combination process in treating high silica Arkansas ore. Kaiser plans to produce all of its increased alumina requirements by enlarging the facilities at Baton Rouge, Louisiana, to an annual capacity of about 800,000 tons. This plant will be adapted to treat both Jamaican and Surinam ore. Reynolds was enlarging the Hurricane Creek, Arkansas, plant to include modified Bayer equipment for using Jamaican bauxite. In addition, Reynolds was planning to construct a new modified Bayer alumina plant, which will be adjoining the new Corpus Christi, Texas, reduction plant. The total capacity of all the alumina plants will be about doubled by this expansion program. Some of these facilities were installed during 1951, but most will reach completion in 1952.

Price quotations on bauxite as published by E. & M. J. Metal and Mineral Markets were unchanged in 1951. Crude undried bauxite, 50 to 52 percent Al_2O_3 was quoted at $4.50 to $5.50 per long ton, f.o.b., Arkansas mines. The duty on crude bauxite and dried bauxite remained at 50 cents per long ton throughout 1951. Calcined bauxite was dutiable at the rate of 15 percent ad valorem unless it was imported for use in the manufacture of refractories, for which the duty was $1 per ton.

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MINERAL MARKET REPORT MMS NO. 2047
(Replaces November and December
monthly reports 91 and 92)

MINE PRODUCTION OF GOLD IN THE UNITED STATES IN 1951
PRELIMINARY ANNUAL FIGURES

The United States output of recoverable gold was 18 percent less in 1951 than in 1950, and the decline was general in all of the principal gold-producing States, according to the Bureau of Mines, United States Department of the Interior. The decrease in production is attributed to various factors for various areas including lack of labor, depletion of reserves at some properties, lower average gold content of base-metal ores mined in 1951, smaller output (of base-metal ores containing gold) because of strikes, and curtailment or abandonment of straight gold mining operations owing to high costs and the fixed price of gold.

Despite a decline in production of 18 percent, South Dakota maintained its rank of the leading gold-producing State. Utah, the second ranking producer, lost 5 percent and third-ranking California lost 17 percent. Fourth- and fifth-ranking Alaska and Nevada dropped 29 and 31 percent, respectively. Virtually all of the gold production of South Dakota and Alaska, as well as most of that of California, is recovered from straight gold mining. Most of the remainder of the United States output of gold is recovered as a byproduct of base-metal ores.

This report which summarizes mine output for 1951 is part of the regular monthly gold mine production series. As preliminary figures for November and estimates for December are included, the report serves for both these months and the next issue will be for January 1952. The following table and State reviews for 1951 were obtained from current preliminary reports of the Regional offices of the Bureau of Mines, a procedure followed in the preparation of all the reports in the series. The figures are given in terms of recoverable gold content of ores and concentrates.

Alaska. - Gold production in Alaska decreased 29 percent in 1951 compared with 1950, and was the lowest since 1945. The decline resulted from cessation of activity at numerous gold mining operations and curtailment at others because of the high cost of labor and materials and unavailability of some supplies. To some degree, construction projects under Government contracts drained the labor supply normally available for mining. In certain instances it was more profitable for mine operators to rent mechanical equipment (draglines and bulldozers) for construction work rather than to use such machines for mining. Nearly all of the total 1951 Alaska gold output came from placer mining, mostly by bucket-line dredging. The principal gold producer in Alaska in 1951 was the United States Smelting, Refining and Mining Co. which operated 5 dredges in the Fairbanks district and 3 dredges in the Nome district. Activity at lode gold mines was limited to two operators in the Willow Creek district. The reworking of old tailings at the Alaska Juneau mill on Gastineau Channel, and at the Chichagof mill on Chichagof Island, Southeastern Alaska, continued during 1951.

Prepared by James E. Bell under the supervision of M. H. Kline, Chief, Rare and Precious Metals Branch, Minerals Division.

Arizona. - Gold production continued at a high level in Arizona in 1951, although the output declined slightly from that of 1950. Nearly 72 percent of the gold produced in Arizona in 1951 was recovered as a byproduct of copper ore, compared with 66 percent from this source in 1950. The remainder came mostly from zinc-lead ore and zinc-copper ore. An estimated 100 ounces of gold were recovered in placer operations. The largest producers of gold in Arizona in 1951 were the New Cornelia, Copper Queen, Iron King, Magma, Morenci, and United Verde mines; these 6 properties produced 92 percent of the State total.

California. - Although gold production in California dropped 17 percent in 1951 compared with 1950, the State maintained its rank of third in gold production, exceeded by only South Dakota and Utah. The decline was caused by the closing down of several dredges, attributed to operating difficulties and depletion of values at some gravel deposits; and to barriers to expansion at precious metal mines imposed by the fixed price of gold and silver. Placer mines furnished about 56 percent of the State's total gold in 1951 compared with 60 percent in 1950. The principal producers of placer gold were the Yuba Consolidated Gold Fields which operated dredges in the Yuba River district, Yuba County, the Oroville district, Butte County, and the Scott River district, Siskiyou County; and the Natomas Co. dredges and Capitol Dredging Co. boats in the Folsom district, Sacramento County. New placer mining enterprises in 1951 included the Alean Mining Co. bucket-line dredge on Copper Creek and the Oregon Gulch Gold Dredging Co. bucket-line dredge at the La Grange property, both in Trinity County; Thurman and Wright dragline dredge, Butte Creek district, Butte County; the Mountain Gold Dredging Co. dragline, Campo Seco district, Calaveras County; and the Minona Mining Co. development, French Corral district, Nevada County. The leading lode gold producers in 1951 were the Idaho-Maryland Mines Corp. and Empire Star Mines, Ltd., Grass Valley-Nevada City district, Nevada County; Central Eureka Mining Co., Mother Lode district, Amador County; Original Sixteen-to-One Mine, Inc., Alleghany district and Best Mines Co., Downieville district, Sierra County; and Burton Bros., Inc., Mojave district, Kern County.

Colorado. - The output of gold of Colorado in 1951 was 14 percent less than that in 1950 despite the reopening of a number of gold mines in the Cripple Creek district after the new Carlton custom mill of the Golden Cycle Corporation was put into operation early in the year. The increase in the Cripple Creek production of gold was more than offset by decreases in all the other important gold-producing districts except Leadville, due largely to a drop in the average gold content of complex ores mined. The output of placer gold was 31 percent less in 1951 than in the preceding year. The five leading producers of gold in 1951 were the Treasury Tunnel-Black Bear (Idarado) group in San Miguel County, Resurrection group at Leadville, Smuggler Union group (Telluride Mines) at Telluride, South-Platte Dredging Co. (connected-bucket dredge) near Fairplay, and the Ajax (Golden Cycle Corp.) group at Cripple Creek.

Idaho. - Gold production in Idaho was 45 percent less in 1951 than in 1950. About 73 percent of the output was obtained from lode mines and the remainder from placer mines. All the larger gold dredging companies except one ceased operations during the year. The leading gold producers of the State were the Bradley Mining Co. (antimony-gold ore) at Stibnite, Talache Mines, Inc. (gold ore) at Atlanta, and Warren Dredging Co. (gold placers) at Sunbeam.

Eastern States. - The output of gold in 1951 was 20 percent greater than in 1950. Virtually all the gold currently produced in this region is recovered as a byproduct of copper ore mined in Tennessee, Pennsylvania and Vermont. A few ounces of gold were produced from a lode gold mine in Montgomery County, Maryland in 1951.

Montana. - The output of gold in Montana declined 44 percent below that of the preceding year, continuing a downtrend that started in 1948. The decrease was due to a smaller average gold content of dump ores mined in the Butte area by the Anaconda Copper Mining Co., to the closing down of many of the State's gold mines, and to cessation of operations at some placer mines. The leading gold producers were the Butte Hill mines of the Anaconda Copper Mining Co., the Drumlummon mine of the Montana Rainbow Mining Co., the Missoula Lincoln Metals Co. placer operation, and the Gold Coin mines of the Acme Co.; these properties produced about 60 percent of the State total in 1951.

Nevada. - Gold production in Nevada dropped 31 percent in 1951 below the year-earlier level, due chiefly to a decline in straight gold mining. Placer mining supplied nearly 30 percent of the State's gold in 1951 and byproduct gold from base-metal ores about 60 percent. The principal gold producers in Nevada in 1951 were the Kennecott Copper Corp. (copper ore), White Pine County; the Consolidated Coppermines Corp. (copper ore), White Pine County; Round Mountain Dredging Corp. (mechanical conveyer), Nye County; London Extension Mining Co. (gold ore) Lander County; and the Natomas Co. (bucket-line dredge), Lander County. The Goldfield Deep Mines Co., Esmeralda County, ceased operations in 1951. There was only minor activity in the once flourishing lode gold districts in Storey, Lyon and Nye Counties.

New Mexico. - The New Mexico output of gold was 23 percent greater in 1951 than in 1950, reflecting higher production of base-metal ores containing precious metals as byproducts. Most of the State output of gold was recovered from copper ore from the Central and Lordsburg districts, zinc-lead ore from the Central district, and old copper-bearing tailings from the Pinos Altos district. A few small-scale straight gold mining operations were carried on intermittently.

Oregon. - The gold production in Oregon in 1951 was 27 percent below that of 1950, due to curtailment of operations at both lode and placer mines. Placers accounted for 93 percent of the State total, and most of this was produced by two bucket-line dredges in Baker County. Gold production by lode mines was 73 percent less in 1951 than in 1950.

South Dakota. - Despite an 18-percent drop in gold production in 1951, from that of 1950, South Dakota maintained its rank of the leading gold producer. Most of the production was from the Homestake mine in Lawrence County, which operated continuously but below plant capacity, due chiefly to a shortage of underground miners. The Bald Mountain Mining Company operated its group of mines at Trojan continuously through the year. Small shipments of bullion were made from the Juniper mine in Pennington County.

Utah. - Utah maintained its rank of second in gold production in 1951, although the yield in gold was 5 percent less than in the preceding year. Virtually all of the gold output of Utah is obtained as a byproduct of base-metal mining. Of the total gold of 1951, copper ore furnished 90 percent, and zinc-lead ore 9 percent; about 94 percent came from the West Mountain (Bingham) district. As usual, the Utah Copper mine of the Kennecott Copper Corp. at Bingham was the leading gold producer in the State by a wide margin. It was followed by the New Park property at Park City, United States & Lark group at Bingham, Chief Consolidated mine at Eureka, and Park Utah Consolidated and Silver King Coalition properties near Park City.

Washington. - Gold production in Washington was 25 percent less in 1951 than in 1950, due mainly to smaller output by the Howe Sound Co.'s Holden mine in Chelan County. Less gold was produced from the Gold King mine, also in Chelan County, and from the Knob Hill mine in Ferry County. Nearly 72 percent of the State gold was recovered from gold or gold-copper ore and 28 percent from zinc-copper ore. The Gold King mine ranked first, the Knob Hill second, and the Holden mine third as gold producers in 1951.

Mine production of recoverable gold in the United States in 1951, by months 1/, in fine ounces

Region and State	January	February	March	April	May	June	July	August	September	October	November	December	Total
Eastern States..	178	152	209	236	217	242	201	207	212	219	218	220	2,511
Western States:													
Arizona........	11,000	9,225	10,990	11,150	11,200	9,955	9,440	8,950	8,240	9,300	9,250	9,400	118,100
California....	35,515	33,435	33,479	30,602	31,662	28,588	26,127	26,468	23,261	24,352	23,335	23,743	340,567
Colorado......	10,125	8,462	9,009	6,639	8,731	8,740	10,006	9,523	11,195	12,515	8,555	8,500	112,000
Idaho.........	2,882	3,491	3,249	4,517	2,639	4,172	4,216	4,976	2,603	4,471	3,112	3,201	43,529
Montana.......	2,351	2,209	2,524	2,438	1,878	2,594	3,060	2,657	2,093	2,735	2,167	2,046	28,752
Nevada........	9,528	8,840	11,074	12,670	12,094	10,772	8,864	10,236	9,347	9,912	10,004	9,825	123,166
New Mexico....	247	254	283	519	332	424	389	540	232	259	371	350	4,200
Oregon........	676	503	700	707	841	1,679	740	578	600	400	340	300	8,064
South Dakota..	47,607	43,320	43,783	44,125	40,406	42,093	37,608	35,599	31,445	34,089	33,543	33,300	466,918
Texas.........	1	10	9	5	2	2	3	—	—	—	—	—	32
Utah..........	33,340	33,390	36,175	37,345	39,300	38,830	33,450	33,825	35,000	40,030	36,315	38,200	435,200
Washington....	6,886	5,678	6,762	3,427	5,606	7,772	5,847	4,581	4,506	5,515	7,206	5,257	69,043
Wyoming.......	—	—	—	—	—	—	9	—	—	—	—	—	9
	160,158	148,817	158,037	154,144	154,691	155,621	139,759	137,933	128,522	143,578	134,198	134,122	1,749,580
Alaska 2/.......	278	82	325	1,313	6,586	14,480	27,908	43,744	41,096	39,465	18,175	12,000	205,452
Total United States..	160,614	149,051	158,571	155,693	161,494	170,343	167,868	181,884	169,830	183,262	152,591	146,342	1,957,543

1/ Revised figures.
2/ Alaska monthly totals based on mint and smelter receipts.

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UNITED STATES DEPARTMENT OF THE INTERIOR

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MINERAL MARKET REPORT NO. 2048
(Replaces November and December
monthly reports 91 and 92)

MINE PRODUCTION OF SILVER IN THE UNITED STATES IN 1951
PRELIMINARY ANNUAL FIGURES

Mine production of recoverable silver was 7 percent smaller in 1951 than in 1950, according to the Bureau of Mines, United States Department of the Interior. The decrease in production was general in all the principal silver-producing States except in California, New Mexico and Utah. Idaho maintained its customary rank as the leading silver-producer, followed in order by Utah, Montana, Arizona, and Colorado. The decline was due to smaller output in some areas of base-metal ores containing byproduct silver, and to a lower average silver content in other areas of base-metal ores mined. The Treasury buying price for silver domestically mined remained at $0.905+ per troy ounces throughout the year.

Changes in the production rate of five leading silver-producing States in 1951 were declines of 9, 8, 3, and 20 percent for Idaho, Montana, Arizona, and Colorado, respectively; and a gain of 4 percent for Utah. The greater part of Idaho's silver (68 percent in 1951) comes from silver ore. Virtually all the remainder of the Country's silver output is recovered from base-metal ores and gold ores as a byproduct.

This report which summarizes mine output for 1951 is part of the regular monthly silver mine production series. As preliminary figures for November and estimates for December are included, the report serves for both these months and the next issue will be for January 1952. The following table and State reviews for 1951 were obtained from current preliminary reports of the Regional offices of the Bureau of Mines, a procedure followed in the preparation of all the reports in the series. The figures are given in terms of recoverable silver content of ores and concentrates.

Alaska. - Silver production in Alaska was 47 percent less in 1951 than in 1950. Most of the output was recovered as a byproduct of gold mining, principally bucket-line dredging in the Fairbanks and Nome districts; the decline reflected the lower level of gold mining in Alaska in 1951. The Riverside mine, Hyder district, Southeastern Alaska, which usually yields silver as a byproduct of lead ore production, did not operate during 1951.

Arizona. - Arizona's production of silver in 1951 dropped 3 percent below that of 1950. Most of the State silver is a byproduct of copper ore and lead-zinc ore. In 1951 production of silver from copper ore increased over the year-earlier quantity, but that from zinc-copper ore and zinc-lead ore decreased. Approximately 77 percent of the State silver yield of 1951 came from the Copper Queen, Morenci, New Cornelia, and United Verde mines of the Phelps Dodge Corp.; and the Iron King and Magma mines.

Prepared by James E. Bell under the supervision of M. H. Kline, Chief, Rare and Precious Metals Branch, Minerals Division.

California. - Greater yield of byproduct silver from base-metal ores raised California's 1951 production of silver 4 percent over that of 1950. The principal producers were the Darwin and Shoshone lead and zinc-lead properties of the Anaconda Copper Mining Co., Inyo County; the Afterthought zinc mine of the Coronado Copper & Zinc Co., Shasta County; and the Penn zinc mine of the Penn Chemical Co., Calaveras County. Silver in relatively small quantity was recovered incidental to gold production from auriferous ores and gravels.

Colorado. - Silver production in Colorado in 1951 was 20 percent below the 1950 level, due principally to a decline in the average silver content of the complex and base-metal ores mined. The leading silver-producers, in order of output, were: Treasury Tunnel-Black Bear (Idarado) group in San Miguel County, Eagle mine at Gilman, Shenandoah-Lives group near Silverton, Emperius Mining Co. group at Creede, and the Resurrection group at Leadville.

Eastern States. - Silver production from mines in the Eastern States was 9 percent greater in 1951 than in 1950. All the silver was recovered as a byproduct of copper ore and lead ore mined in Pennsylvania, Tennessee, Vermont and New York.

Idaho. - Despite a drop of 9 percent in silver production in 1951 from that of 1950, Idaho maintained its position of the leading silver producer by a wide margin. Sixty-eight percent of the State total silver was recovered from silver ores, and 30 percent from zinc-lead ores. The Sunshine Mining Company, operating its own mine, as well as properties of six other mining companies in the Coeur d'Alene region, was the largest silver producer; it was followed in order by the Bunker Hill and Sullivan Mining and Concentrating Co., Silver Summit mine of Polaris Mining Co., Triumph Mining Co., and the Page mine of the Federal Mining and Smelting Co. Nearly 91 percent of the State's silver production of 1951 was recovered from mines in the Coeur d'Alene area.

Missouri. - The output of silver of Missouri was virtually the same in 1951 as in 1950. This silver is recovered as a byproduct from the smelting of lead and lead-copper concentrates produced in the southeastern part of the State.

Montana. - Despite a drop of 8 percent in silver output from the year-earlier level, Montana maintained its accustomed rank of third in silver production in 1951, surpassed by only Idaho and Utah. The decline in production was due largely to a lower silver content of Butte Hill dump ores treated at the Anaconda zinc concentrator. The Butte Hill operations of the Anaconda Copper Mining Co. accounted for 93 percent of the State's silver output in 1951.

Nevada. - With a drop of 35 percent in 1951 compared with 1950, silver production in Nevada decreased sharply for the second consecutive year. The principal factors in the decline were the comparatively low yield of byproduct silver from lead and zinc ores; and cessation of operations in August at the Dan Tucker mine of Summit King Mines, Ltd. in Churchill County, because of ore depletion. The leading silver-producers in Nevada in 1951 were Combined Metals Reduction Co. (zinc-lead ore), Lincoln County; Summit King Mines, Ltd. (gold-silver ore), Churchill County; and the Kennecott Copper Corp. (copper ore), White Pine County. Silver recovered from copper ore was slightly above the 1950 output from this source.

New Mexico. - Reversing a downtrend that prevailed in 1949 and 1950, silver production in New Mexico rose sharply (31 percent) in 1951 over that of the preceding year. The increase resulted from the mining of larger tonnages of base-metal ores that yield silver as a byproduct. Producers of substantial amounts of silver included the Ground Hog and Bayard zinc-lead mines in Grant County, the Lynchburg zinc-lead mine in Socorro County, and the Bonney-Miser's Chest copper mine in Hidalgo County.

Oregon. - Silver production in Oregon was 56 percent less in 1951 than in 1950. Approximately 47 percent of the State's silver was recovered incidental to gold placer mining in Baker County. Most of the remainder was obtained from gold ore mined in Grant County and gold and copper ore mined in Lane County.

South Dakota. - Recovery of silver in South Dakota is incidental to gold mining. Silver production declined one percent in South Dakota in 1951 paralleling the drop in gold output but to a smaller degree.

Utah. - The output of silver in Utah was 4 percent greater in 1951 than in 1950, and the State again maintained its rank of second in silver production, surpassed only by Idaho. A substantial increase in output of silver from zinc-lead ore more than offset the loss in output from copper ore. Of the total silver produced in Utah in 1951, copper ore supplied 43 percent; zinc-lead ore 43 percent; and gold-silver ore, silver ore and lead ore, together, most of the remainder. About 68 percent of the State silver output in 1951 came from the West Mountain (Bingham) district, 15 percent from the Park City region, and 13 percent from the Tintic district. The Utah Copper mine of the Kennecott Copper Corp. at Bingham was by far the leading silver producer; it was followed by the United States & Lark group at Bingham, the Chief Consolidated mine at Eureka, the New Park property and Daly No. 1 dump at Park City, and the Butterfield group at Bingham.

Washington. - Silver production in Washington declined 7 percent in 1951, owing to smaller output of gold ores and base-metal ores containing silver as a byproduct. The largest producers of silver in Washington in 1951 were the Knob Hill mine, Ferry County; Holden mine, Chelan County; Gold King mine, Chelan County; and the Bonanza mine, Stevens County.

Mine production of recoverable silver in the United States in 1951, by months 1/, in fine ounces

Region and State	January	February	March	April	May	June	July	August	September	October	November	December	Total
Eastern States.	9,057	7,962	10,252	11,214	10,264	10,006	9,440	11,562	9,256	11,860	10,184	10,428	121,485
Southern Illinois and Kentucky.....	284	283	194	240	186	355	371	354	324	314	320	335	3,560
Missouri.......	21,849	19,773	21,636	17,756	19,454	18,560	17,487	20,260	17,102	22,459	21,417	19,460	237,213
Western States:													
Arizona.......	445,885	412,455	477,760	476,600	489,800	424,500	404,100	378,000	380,800	430,000	414,000	431,100	5,165,000
California....	99,616	90,927	93,345	106,231	99,111	91,041	90,122	80,363	74,765	97,125	98,595	91,047	1,112,288
Colorado......	293,895	249,772	296,948	229,848	225,347	228,440	242,094	234,562	235,222	182,273	189,599	200,000	2,808,000
Idaho.........	1,260,617	1,286,336	1,394,218	1,391,093	1,387,321	1,212,052	1,107,882	972,644	893,295	1,178,708	1,228,215	1,329,850	14,642,231
Montana.......	597,568	542,846	626,387	569,628	532,619	541,221	492,807	406,548	364,004	452,489	474,879	453,657	6,054,653
Nevada........	100,113	93,073	87,776	86,154	92,189	85,320	74,545	69,430	70,409	77,306	79,027	78,902	994,244
New Mexico....	31,814	30,081	31,234	33,467	42,767	38,752	40,436	38,387	36,462	42,900	40,200	38,500	445,000
Oregon........	1,928	108	762	151	242	1,459	469	303	275	177	76	60	6,010
South Dakota..	13,580	12,200	12,390	13,440	12,080	12,330	11,960	11,610	10,590	10,440	10,100	10,060	140,780
Texas.........	12	152	120	268	78	78	101	—	—	270	152	150	1,381
Utah..........	556,110	633,785	676,900	657,620	668,000	653,150	549,800	479,700	599,675	638,260	627,000	625,000	7,365,000
Washington....	34,306	25,540	29,172	18,245	26,634	30,465	25,439	28,915	23,933	29,105	40,746	26,555	339,054
Wyoming.......	—	—	—	—	—	—	2	—	—	—	—	—	2
	3,435,444	3,377,275	3,727,012	3,582,745	3,576,188	3,318,808	3,039,756	2,700,462	2,689,430	3,139,053	3,202,589	3,284,881	39,073,643
Alaska 2/......	64	1,766	87	78	950	1,857	3,338	5,628	5,066	4,832	2,494	1,600	27,760
Total United States.	3,466,698	3,407,059	3,759,181	3,612,033	3,607,042	3,349,586	3,070,394	2,738,266	2,721,178	3,178,518	3,237,004	3,316,704	39,463,661

1/ Revised figures.
2/ Alaska monthly totals based on mint and smelter receipts.

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MINERAL MARKET REPORT
MMS NO. 2049
(Replaces November and
December monthly reports, 126 and 127)

MINE PRODUCTION OF LEAD IN THE UNITED STATES IN 1951 - PRELIMINARY ANNUAL FIGURES

Domestic mine production of recoverable lead declined to 390,428 tons in 1951, 9 percent below the 1950 total and the lowest annual output since 1947, according to the Bureau of Mines, United States Department of the Interior. This loss occurred despite higher prices and the strong demand for lead engendered by the expanding national defense program. The decrease in output was accounted for partly by the shutdown of most of the lead mines, mills, and smelters in the Western United States by a labor strike from August 23 to September 6, and partly by depletion of orebodies. Missouri was by far the largest lead-producing State, accounting for 32 percent of the total United States output. Idaho and Utah were the second and third leading States, producing 19 percent and 13 percent, respectively, of the nation's total.

Production in 8 of the 15 principal States or regions was lower than that in 1950. The largest decreases, on a tonnage basis, were in Idaho, Arizona, Missouri, Oklahoma, Washington, Nevada, and California. States in which lead production increased substantially included Utah, Colorado, Montana, and New Mexico. The average daily production rate in 1951 was 1,070 tons compared with 1,180 tons per day in 1950.

The market price for common lead, quoted at New York, was 17.00 cents per pound from October 31, 1950 to October 2, 1951 when the price advanced to 19.00 cents, at which point it remained for the balance of the year. These quotations were ceiling prices imposed by regulations of the Office of Price Stabilization.

This report which summarizes mine output for 1951 is part of the regular monthly lead mine production series. As preliminary figures for November and estimates for December are included, the report serves both these months and the next issue will be for January 1952. The following table and State reviews for 1951 were obtained from reports of the regional offices of the Bureau of Mines. The figures are given in terms of recoverable lead content of ores and concentrates.

Prepared by O. M. Bishop, under the supervision of Charles H. Johnson, Chief, Base Metals Branch, Minerals Division.

States East of the Mississippi River

Production of lead in States East of the Mississippi River totaled 7,426 tons in 1951, a decrease of 9 percent from the 8,178 tons produced in 1950. Output of lead in New York, Tennessee, and Virginia dropped to 3,046 tons, 37 percent less than the previous year's total, principally because of a labor strike at the Austinville mine of the New Jersey Zinc Co. from April 1 to September 22 which resulted in a decrease of 53 percent in the lead production of Virginia. Lead is produced chiefly as a byproduct or co-product with zinc in these States; the leading producers are the New Jersey Zinc Co. (Austinville mine, Virginia), and the St. Joseph Lead Co. (Balmat mine, New York).

In Southern Illinois and Kentucky lead production in 1951, (2,457 tons) was 61 percent higher than in 1950. The bulk of this region's output came from the Ozark-Mahoning Co. mines where lead is recovered mainly as a byproduct or co-product with fluorspar.

Lead production from Northern Illinois and Wisconsin rose to 1,923 tons in 1951, 7 percent above 1950. The leading producers were the Calumet & Hecla Consolidated Copper Co., the Dodgeville Mining Co., the Eagle-Picher Co., the Tri-State Zinc Co., and the Vinegar Hill Zinc Co.

Arkansas, Kansas, Missouri, and Oklahoma

The West Central States reported a lead production of 152,258 tons in 1951, nearly 8 percent less than the quantity mined in 1950. Missouri, the greatest lead-producing State in the country, produced 125,928 tons.

Southeastern Missouri. - The St. Joseph Lead Company continued as the largest individual lead producer in the United States in 1951. The company operated its four large mills, having a combined capacity of 26,800 tons daily, and its Bonne Terre, Desloge, Federal (including Doe Run) and Leadwood groups of mines in the Lead Belt, St. Francois County, throughout the year. In addition, the St. Joseph Lead Co. operated Mine La Motte and its 2,000-ton mill as a joint venture with the National Lead Company. The St. Joseph Lead smelter at Herculaneum was shut down on October 18 by a strike of its employees and remained idle the rest of the year. The National Lead Company, St. Louis Smelting & Refining Division, operated its Madison lead-copper mine and 1,200-ton flotation mill at Fredericktown during the year. Production was curtailed at these operations for a 7-week period during April and May when employees went on strike. The Midwest Mining & Milling Co, formerly the Fredericktown Lead Co., continued development work at its Catherine and Fleming mine but reported production only during the first quarter.

Tri-State (Joplin) district. - Lead production in the Tri-State district declined from 31,157 tons in 1950 to 27,834 tons in 1951, chiefly because of the lower grade of ore mined. This decrease occurred despite the higher average prices received for lead concentrates -- $210.72 per ton, f.o.b. mill bins, in 1951 compared with $153.40 in 1950, and concurrently with an 11 percent increase in zinc production. The recovery of lead from ore declined from 0.87 percent in 1950 to 0.64 percent in 1951. The Eagle-Picher Co. Mining & Smelting Division was by far the largest producer in the district, and was followed by the American Zinc, Lead & Smelting Co., Nellie B. Division. Other large producers were the National Lead Co. St. Louis Smelting & Refining Division, Beck Mining Co., Dines Mining Co., Potter & Sims, Federal Mining & Smelting Co., and Mission Mining Co.

Arkansas. - Mining activity in Arkansas remained on a limited scale in 1951 with total production of 28 tons of recoverable lead. The ore was obtained from the St. Joe and Yellville districts.

Western States

Mine production of recoverable lead in the combined Western States totaled 230,723 tons in 1951, a 10-percent decrease from 1950. These States contributed 59 percent of the total domestic production compared with 60 percent in 1950.

Arizona. - Owing to a continued reduction in output of zinc-lead ore at the Copper Queen Branch of the Phelps Dodge Corp. at Bisbee, and to a decline in production of lead from other important producers, Arizona's output of recoverable lead dropped from 26,383 tons in 1950 to 17,300 tons in 1951 (34 percent). Operations at the Copper Queen Branch were continuous throughout the year, but output of zinc-lead ore was only 20 percent of that in 1950, as zinc-lead ore reserves are being depleted. More than 90 percent of the State lead output in 1951 came from zinc-lead ore from the Old Hat, Big Bug, Pima, Harshaw, Warren (Bisbee), and Aravaipa districts. The principal producers in order of production were the St. Anthony Mining & Development Co. (Mammoth-St. Anthony property), Shattuck-Denn Mining Corp. (Iron King mine), Eagle-Picher Co. (San Xavier mine), American Smelting & Refining Co. (Trench unit), Phelps Dodge Corp. (Copper Queen Branch), and Athletic Mining Co. (Aravaipa group).

California. - California's lead output decreased to 13,700 tons in 1951, 13 percent below that of 1950. The Anaconda Copper Mining Co. (Darwin and Shoshone groups, Inyo County) was by far the leading producer in the State. A new 135-ton lead-oxide section of the Darwin mill started operation in September allowing expanded production for the remainder of the year. The Coronado Copper & Zinc Co. Afterthought mine in Shasta County was the only other large producer of lead during the year. Small tonnages of lead were obtained from the Penn Chemical Co. Penn mine, the Minnietta mine (Finley & Vignich), Modoc district, and the Lippincott Lead Mines property, Ubehebe district, Inyo County.

Colorado. - Lead production in Colorado in 1951, increasing for the fifth consecutive year, was the largest in quantity since 1927 and, like zinc, established a new record for value. Output totaled 30,400 tons, 13 percent more than in 1950. Nearly all the mines expanded production in response to the sustained heavy demand for lead. The leading producers in order of output were: Resurrection Mining Co. (Resurrection group), Idarado Mining Co. (Treasury Tunnel -- Black Bear group), New Jersey Zinc Co. Empire Zinc Division (Eagle mine), Telluride Mines, Inc. (Smuggler Union group), Rico Argentine Mining Co. (Rico Argentine group), Shenandoah Dives Mining Co., Emperius Mining Co., King Leases, Inc., Pride of the West, Inc., and Callahan Zinc-Lead Co.

Idaho. - Production of recoverable lead in Idaho declined to 75,164 tons in 1951, a decrease of about 25,000 tons below the 1950 output. The decline was due partly to the closing of all the larger zinc-lead mines for two weeks in August and September by the labor strike and partly to a general shortage of skilled underground workers. The Bunker Hill mine of the Bunker Hill & Sullivan Mining & Concentrating Co. remained in first place as the largest lead producer in the State. Other large producers in order of production were the Page mine of the Federal Mining & Smelting Co., the Star mine of the Sullivan Mining Co., the Morning mine of the Federal Mining & Smelting Co., the Sunshine Mining Co. mines, the Triumph Mining Co. operations, the Dayrock mine of Day Mines, Inc., the Sidney group of the

Sidney Mining Co., the Tamarack and Sherman mines of Day Mines Inc., and the Constitution mine of the Spokane-Idaho Mining Co. These mines supplied about 84 percent of the State total lead. The Coeur d'Alene region, Shoshone County, accounted for 92 percent of the lead produced in the State during 1951.

Montana. - Montana increased its output of recoverable lead to 21,736 tons in 1951, a gain of 11 percent over 1950. The larger output was due mainly to an increase of about 470,654 tons in the quantity of zinc-lead ore, special waste, and dump material mined by the Anaconda Copper Mining Co. from its Butte Hill properties. This output of the Butte Hill mines accounted for approximately 76 percent of the State total. The remainder of the lead produced came chiefly from the Mike Horse mine in Lewis and Clark County and the Jack Waite mine in Sanders County, both properties of the Federal Mining & Smelting Co.

Nevada. - Nevada produced 7,320 tons of recoverable lead in 1951 or 22 percent less than the tonnage reported in 1950. The Pioche district and adjacent Comet district, Lincoln County, contributed about two-thirds of the State total, and of this output Combined Metals Reduction Co. and Ely Valley Mines, Inc. supplied all but a small percentage. Lead output from other districts came from relatively small operations in the Jack Rabbit and Groom districts, Lincoln County; the Candelaria district, Mineral County; the Quartz Mountain district, Nye County; the White Pine district, White Pine County; and the Tecoma, Merrimac, and Railroad (Bullion) districts, Elko County.

New Mexico. - Lead production from New Mexico rose 40 percent to 5,800 tons in 1951; a large percentage gain was to be expected as output in 1950 was unusually low because most of the mines that shut down when metal prices declined in 1949 remained idle for several months in 1950. The bulk of the State output came from mines producing zinc-lead or zinc ore in the Central and Magdalena districts, although a substantial tonnage of lead and lead-barite ores was mined in the Hansonberg district (Socorro County). The principal producers were the American Smelting & Refining Co. Ground Hog group and the United States Smelting, Refining & Mining Co. Bayard group in the Central district, and the Elayer & Co. Lynchburg mine in the Magdalena district.

Texas. - Texas produced 43 tons of lead in 1951 all of which came from operations in the Presidio-Shafter area or the Sierra Blanca area in the Big Bend country.

Utah. - Utah increased its output of recoverable lead to 51,300 tons in 1951, a gain of 15 percent over 1950. The gain resulted largely from an increase in output of lead-zinc ore from the United States & Lark mine at Bingham, although the property was idle for 13 days because of strikes. Substantial increases in lead output were also made from the New Park, Park Utah Consolidated, and Silver King Coalition properties in the Park City region. About 58 percent of the State output was obtained from the West Mountain (Bingham) district, 23 percent from the Park City region, and 12 percent from the Tintic district. The United States & Lark mine of the United States Smelting, Refining & Mining Co. remained by far the largest producer in the State. Other leading producers included the Park Utah Consolidated Mining Co., Chief Consolidated Copper Co., New Park Mining Co., Silver King Coalition Mining Co., Calumet Mining Co., and Butterfield Mining Co.

Washington. - The production of lead in Washington in 1951 decreased 23 percent from the record high total of 10,334 tons produced in 1950. The leading producers were the property of the Pend Oreille Mines & Metals Co. at Metaline Falls, the

Grandview mine of the American Zinc, Lead & Smelting Co., also at Metaline Falls, the Bonanza mine which was acquired by the Anaconda Copper Mining Co. in February 1951, and the Deep Creek and Anderson mines of Goldfield Consolidated Mining Co. The Bonanza mine and the Deep Creek and Anderson properties are near Colville in Stevens County. These four properties produced 98 percent of the State lead.

Alaska

No lead was mined in Alaska in 1951. Output of lead and the byproducts, copper and zinc have been limited in the past several years largely to the Riverside mine, near Hyder in Southeastern Alaska, which was not operated in 1951. A small tonnage of lead concentrates shipped to a smelter in the United States in 1951 and which yielded 21 tons of lead was actually mined in 1950.

Mine production of recoverable lead in the United States in 1950 and 1951, by months 1/, in short tons

Region and State	Total 1950	January	February	March	April	May	June	July	August	September	October	November	December	Total 1951
States East of the Mississippi River:														
Southern Illinois & Kentucky.......	1,526	189	128	159	175	247	273	247	303	198	168	184	186	2,457
Northern Illinois & Wisconsin......	1,801	115	150	241	208	169	130	138	174	133	138	179	148	1,923
New York, Tennessee & Virginia...	4,851	461	434	382	135	108	104	85	126	102	380	339	390	3,046
	8,178	765	712	782	518	524	507	470	603	433	686	702	724	7,426
West Central States:														
Arkansas...........	9	5	5	5	5	5	5	2	3	3	–	–	–	38
Kansas............	9,487	769	713	909	784	895	926	835	1,015	747	767	753	720	9,833
Missouri..........	134,626	11,530	10,421	11,411	9,256	10,034	9,738	9,081	10,562	9,132	11,911	11,072	11,780	125,928
Oklahoma..........	20,724	1,455	1,260	1,570	1,473	1,401	1,401	1,266	1,514	1,314	1,280	1,275	1,250	16,459
	164,846	13,759	12,399	13,895	11,518	12,335	12,070	11,184	13,094	11,196	13,958	13,100	13,750	152,258
Western States:														
Arizona...........	26,383	1,500	1,465	1,635	1,470	1,630	1,455	1,390	1,420	1,255	1,315	1,350	1,415	17,300
California........	15,831	1,230	1,240	1,280	1,240	1,130	1,070	1,180	920	900	1,140	1,220	1,150	13,700
Colorado..........	27,007	2,801	2,268	2,788	2,768	2,485	2,551	2,528	2,619	2,568	2,374	2,300	2,350	30,400
Idaho.............	100,025	7,525	6,676	7,619	6,914	6,613	6,096	6,230	5,089	4,591	5,731	5,811	6,269	75,164
Montana...........	19,617	1,750	1,758	1,699	1,937	1,859	1,917	1,920	1,562	1,366	2,108	1,925	1,935	21,736
Nevada............	9,408	710	630	640	580	640	610	520	570	560	650	610	600	7,320
New Mexico........	4,150	446	474	564	467	484	446	500	449	453	531	496	490	5,800
Oregon............	17	1	–	–	–	–	1	–	–	–	–	–	–	2
South Dakota......	–	–	–	–	–	–	–	–	–	2	–	–	–	2
Texas.............	129	2	8	8	7	3	3	6	–	2	2	1	1	43
Utah..............	44,753	3,970	4,580	4,935	5,100	5,380	5,030	3,770	2,690	3,735	3,870	4,100	4,140	51,300
Washington........	10,334	731	777	810	603	623	556	496	670	559	745	711	675	7,956
	257,654	20,666	19,876	21,978	21,086	20,847	19,735	18,540	15,989	15,991	18,466	18,524	19,025	230,723
Alaska 2/..........	149	–	21	–	–	–	–	–	–	–	–	–	–	21
Total United States.	430,827	35,190	33,008	36,655	33,122	33,706	32,312	30,194	29,686	27,620	33,110	32,326	33,499	390,428
Daily average 3/....	1,180	1,135	1,179	1,182	1,104	1,087	1,077	974	958	921	1,068	1,078	1,081	1,070

1/ Revised figures. 2/ Alaska monthly totals based on smelter receipts. 3/ Based on number of days in the month without adjustment for Sundays and holidays.

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MINERAL MARKET REPORT
MMS NO. 2050
(Replaces November and
December monthly reports, 129 and 130)

MINE PRODUCTION OF ZINC IN THE UNITED STATES IN 1951 - PRELIMINARY ANNUAL FIGURES

Domestic mine production of recoverable zinc (including that recovered as zinc pigments and salts directly from ore) increased to 679,111 tons in 1951, 9 percent above the 1950 total and the largest output since 1944, according to the Bureau of Mines, United States Department of the Interior. This high output was achieved despite a 2-weeks' shutdown of mines, mills, and smelters caused by a labor strike in the Western States from August 23 to September 6. The increased yield was attributed to a greater demand for zinc generated by the expanding defense program. Regionally, on a percentage basis, the largest gains were recorded in the West Central States of Oklahoma, Kansas, Missouri, and Arkansas where the combined 1951 output was 13 percent above 1950, but still less than half the World War II yearly average. Zinc output in the Western States and the States East of the Mississippi River increased 9 percent and 8 percent, respectively, during the year. The largest State percentage increases were made in California, Colorado, Montana, Washington, Missouri, Southern Illinois and Kentucky, and New Mexico, with gains ranging from 20 to 55 percent. Idaho, Arizona, and Nevada were the only States that produced less zinc than in 1950. The average daily production rate for the whole country was 1,861 tons compared with 1,708 tons per day in 1950.

The market price for Prime Western grade slab zinc, East St. Louis, was 17.50 cents per pound until October 2 when the price advanced to 19.50 cents at which level it remained for the remainder of the year. These quotations were ceiling prices imposed by the Office of Price Stabilization.

This report which summarizes mine output for 1951 is part of the regular monthly mine production series. As preliminary figures for November and estimates for December are included, the report serves both these months and the next issue will be for January 1952. The following table and State reviews for 1951 were obtained chiefly from reports of the regional offices of the Bureau of Mines, a procedure followed in the preparation of all reports in this series. The figures are given in terms of recoverable zinc content of ores and concentrates.

Prepared by O. M. Bishop, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

States East of the Mississippi River

Mine production of zinc in States East of the Mississippi River totaled 188,525 tons or 28 percent of the United States total in 1951. This tonnage represented an 8 percent increase over the previous year. New Jersey, the third largest producing State in the country, accounted for nearly one-third of the region's output. New York, Tennessee, and the Northern Illinois-Wisconsin district were the other principal zinc producing areas in this region. Zinc production from Virginia was curtailed by approximately 8,000 tons because of the labor strike at the Austinville mine of the New Jersey Zinc Company from April 1 to September 22.

The Southern Illinois-Kentucky district from which zinc is produced chiefly as a byproduct or co-product with fluorspar recorded the largest percentage gain for this region, 47 percent above 1950. Zinc output from mines in Northern Illinois and Wisconsin totaled 31,361 tons compared with 26,793 tons in 1950, an increase of 17 percent.

The principal zinc producing companies are the New Jersey Zinc Co. (Franklin and Sterling Hill mines in New Jersey and Austinville mine in Virginia), the St. Joseph Lead Co. (Balmat and Edwards mines in New York), the American Zinc Co. of Tennessee (Mascot #2, Grasselli, Jarnagin, and Athletic mines in Tennessee), the Universal Exploration Co., and Tennessee Copper Co. in Tennessee; the Tri-State Zinc Co., Calumet and Hecla Consolidated Copper Co., Eagle Picher Co., Vinegar Hill Zinc Co., and Dodgeville Mining Co., in Northern Illinois and Wisconsin; and the Ozark-Mahoning Co., Minerva Oil Co., and Alcoa Mining Co. in Southern Illinois and Kentucky.

Events during 1951 significant to the future outlook for zinc production in this region were the continued development of the zinc mine near Friedensville, Pennsylvania by the New Jersey Zinc Co.; the preparation for operation of lead and zinc mines near Embreeville, Tennessee by the Appalachian Mining and Smelting Co.; and the announcement by the American Zinc Co. of Tennessee of discovery of a large heretofore undeveloped zinc deposit in the general area of its present operations in Tennessee.

Arkansas, Kansas, Missouri, and Oklahoma

Mine production of recoverable zinc in the West Central States totaled 92,457 tons in 1951 compared with 82,112 tons in 1950, an increase of 13 percent.

Tri-State (Joplin) district. - Zinc production from the Tri-State district, accounting for 97 percent of the region total, increased 11 percent over the previous year. The chief factor contributing to the increased output was the higher average price received for concentrates - $120.26 per ton, f.o.b. mill bins, in 1951 compared with $92.89 per ton in 1950. The grade of ore mined declined considerably in 1951, the zinc recovery being 2.77 percent compared with 3.15 percent in 1950.

The Eagle-Picher Company, Mining and Smelting Division, operating 26 mines, continued as the major zinc producer of the district. The American Zinc, Lead and Smelting Company acquired the properties of the Nellie B. Mining Company on October 1 and operated as the American Zinc, Lead and Smelting Company, Nellie B. Division. This company with its three operating units, Barbara J., Lawyers, and

Rialto, was the second largest producer of zinc during the year. Other leading zinc-producing companies in the district in 1951 were: St. Louis Smelting & Refining Division of the National Lead Co., Federal Mining and Smelting Co., Beck Mining Co., Dale Mining Co., Dines Mining Co., C. & M. Mining Co., Potter & Sims, Mission Mining Co., and Sooner Milling Co. (treating tailings).

Southeastern Missouri. - A total of 3,003 tons of zinc (including some zinc recovered from old slags) was produced in Southeastern Missouri, mostly as a byproduct of lead operations, in 1951 compared with 1,546 tons in 1950.

Arkansas. - Mining activity in Arkansas remained on a limited basis in 1951 with a total production of 70 tons of recoverable zinc. The ore was obtained from the St. Joe and Yellville districts.

Western States

The combined Western States produced 398,128 tons of recoverable zinc in 1951, 9 percent more than the 1950 total. This tonnage represented about 59 percent of the total United States mine production of zinc, virtually the same as the percentage supplied in 1950.

Arizona. - Output of recoverable zinc in Arizona declined to 53,000 tons in 1951, 7,480 tons less than in 1950. The Warren (Bisbee) district, in which the Copper Queen mine is located was the largest zinc-producing area in Arizona from 1944 through 1950; output declined from 20,707 tons in 1950 to 4,600 tons in 1951, owing to depletion of the zinc-lead orebody. Approximately 55 percent of the State's zinc production came from zinc-lead ore, 39 percent from zinc-copper ore, and the remainder chiefly from zinc ore. The principal producers of zinc in 1951 in order of output were Shattuck-Denn Mining Corp. (Iron King mine), Phelps Dodge Corp. (United Verde mine), Magma Copper Co. (Magma mine), Eagle-Picher Co. (San Xavier mine), Phelps Dodge Corp. (Copper Queen mine), American Smelting and Refining Co. (Flux Group), St. Anthony Mining and Development Co. (Mammoth-St. Anthony property), and the Coronado Copper and Zinc Co. (Republic-Mammoth Group).

California. - Mine production of zinc in California in 1951 totaled 9,060 tons, a 20-percent gain over 1950. Concentrates from the Anaconda Copper Mining Co. Darwin group and Shoshone group, the Coronado Copper & Zinc Co. Afterthought mine, and the Penn Chemical Co. Penn mine, supplied practically the entire output of recoverable zinc during the year. Carbonate ore from the Carbonate King zinc mine, Ivanpah district, San Bernardino County, consigned to a fuming plant, and occasional shipments of zinc-lead ore from small mines, also yielded some recoverable zinc.

Colorado. - Colorado's output of zinc in 1951 was the largest in quantity since 1917 and the highest in value since recovery of zinc from ores began in 1885. Production totaled 55,700 tons, 22 percent above the 1950 output. Nearly all the mines stepped up production in response to the sustained heavy demand for zinc. The New Jersey Zinc Co. Empire Zinc Division Eagle mine, Eagle County, was by far the largest producer in the State. Other leading producers were the Resurrection Mining Co. Resurrection group, the Idarado Mining Co. Treasury Tunnel - Black Bear group, the telluride Mines, Inc. Smuggler Union group, and the Rico Argentine Mining Co.

Idaho. - Idaho yielded its position as the leading zinc-producing State to Montana in 1951. Output of recoverable zinc dropped to 79,783 tons, 9 percent less than the 1950 total. The decrease was partly attributed to the 2-weeks' shutdown of most zinc-lead mines by a labor strike in August and September. Operations at some mines were also restricted by a shortage of experienced underground workers. The Star mine of the Sullivan Mining Co. ranked first among Idaho's zinc producers, accounting for nearly 24 percent of the State's output. Following the Star mine were the Bunker Hill & Sullivan Mining and Concentrating Co. Bunker Hill mine, the Page and Morning mines of the Federal Mining & Smelting Co., the Sidney Mining Co. Sidney group, Day Mines, Inc. Tamarack mines, the Spokane-Idaho Mining Co. Constitution mine, the old slag dump at the Bunker Hill & Sullivan Mining and Concentrating Company's lead smelter, Carlisle mine of Day Mines, Inc., and the Frisco mine of the Federal Mining and Smelting Co. These 10 properties, all in the Coeur d'Alene region, and all producing zinc-lead-silver or zinc-lead ores, produced about 84 percent of the total zinc output. The Coeur d'Alene region, Shoshone County, accounted for 96 percent of the State zinc output.

Noteworthy features of the mining industry in the Coeur d'Alene region in 1951 were the continued and successful prosecution of deep exploration in a number of properties, and the marked activities by several mining companies in taking up ground for new exploration ventures in the Hunter district, extending eastward from the vicinity of Mullan to and across the Montana line.

Montana. - Montana became the largest zinc-producing State in the United States in 1951. Output of zinc increased from 67,678 tons in 1950 to 84,205 tons in 1951, a gain of 16,527 tons or 24 percent. Zinc-lead ores, special waste and dump materials from the Butte Hill mines of the Anaconda Copper Mining Co. and manganese-zinc ore, special waste and dump material from the Emma mine of the Butte Copper & Zinc Co. (leased to Anaconda Copper Mining Co. on a 50-50 profit-sharing basis) supplied about 94 percent of the State's zinc output. The remainder came largely from old slag dumps at the East Helena lead smelter and from the Mike Horse and Jack Waite mines of the Federal Smelting & Refining Co.

Nevada. - Mine production of recoverable zinc in Nevada in 1951 declined 20 percent from the 1950 output to 17,210 tons. The Pioche district and adjacent Comet district, Lincoln County, contributed about 90 percent of the State's zinc, and of this output Combined Metals Reduction Co. and Ely Valley Mines, Inc. supplied all but a small percentage. Zinc from districts other than the main producing areas of Lincoln County was largely recovered from occasional ore shipments to custom mills and smelters (these shipments included outputs of the Baldwin mine, Antelope district and the Shultze mine, Cortez district, Eureka County, and the Lucky Strike mine and the Iron Canyon mine, Battle Mountain district, Lander County) and from oxidized zinc ore accepted by a Utah slag fuming plant.

New Mexico. - Output of recoverable zinc in New Mexico totaled 45,400 tons in 1951, 55 percent above 1950 and the highest since 1944. The Central district, Grant County, produced about 93 percent of the State output during the year. The principal district producers, which were also the leading producers in the State, were the American Smelting & Refining Co., Ground Hog group; Kennecott Copper Corp. Oswaldo mine; United States Smelting, Refining & Mining Co. Bayard group; New Mexico Consolidated Mines Co. (operated by the Peru Mining Co.) Kearney group; and the Per Mining Co. Pewabic group. The Hanover mine and mill of the New Jersey Zinc Co., Empire Zinc Division, closed by a strike October 17, 1950, was idle throughout 1951.

Mine production of recoverable zinc in the United States in 1950 and in 1951, by months 1/, in short tons

Region and State	Total 1950	January	February	March	April	May	June	July	August	September	October	November	December	Total 1951
States East of the Mississippi River:														
Southern Illinois & Kentucky.......	6,642	814	621	938	858	838	764	651	741	805	886	927	928	9,771
Northern Illinois & Wisconsin.......	26,793	2,431	2,342	2,534	2,336	3,065	2,760	2,533	2,850	2,452	2,730	2,688	2,640	31,361
New Jersey, New York & Virginia...	105,746	11,310	9,314	9,421	7,812	8,166	8,219	7,704	8,872	8,146	10,401	9,498	9,630	108,493
Tennessee.........	35,326	3,213	2,592	3,364	2,920	3,439	3,491	3,230	3,402	2,993	3,403	3,424	3,429	38,900
	174,507	17,768	14,869	16,257	13,926	15,508	15,234	14,118	15,865	14,396	17,420	16,537	16,627	188,525
West Central States:														
Arkansas..........	8	2	2	4	4	4	5	2	4	2	14	16	11	70
Kansas............	27,176	1,947	2,049	2,843	2,556	2,674	2,665	2,306	2,742	2,555	2,810	2,338	2,340	29,825
Missouri..........	8,189	1,185	1,019	1,077	988	1,003	857	749	839	602	821	723	700	10,563
Oklahoma..........	46,739	4,078	3,594	4,013	4,316	4,676	4,214	4,043	4,320	4,501	4,955	4,749	4,540	51,999
	82,112	7,212	6,664	7,937	7,864	8,357	7,741	7,100	7,905	7,660	8,600	7,826	7,591	92,457
Western States:														
Arizona...........	60,480	4,260	4,115	4,745	4,240	4,790	4,110	4,070	4,875	3,885	4,935	4,575	4,400	53,000
California........	7,551	750	740	800	690	690	780	730	730	660	920	820	750	9,060
Colorado..........	45,776	4,798	4,420	5,375	4,932	4,485	4,701	4,344	4,982	4,796	4,404	4,263	4,200	55,700
Idaho.............	87,890	7,840	7,061	7,705	7,005	7,013	6,627	6,105	5,934	4,815	6,660	6,228	6,790	79,783
Montana...........	67,678	7,385	7,385	7,612	7,889	7,423	7,146	6,920	5,600	5,362	7,460	7,121	6,902	84,205
Nevada............	21,606	1,830	1,590	1,510	1,180	1,440	1,410	1,510	1,280	1,350	1,470	1,290	1,350	17,210
New Mexico........	29,263	3,509	3,156	3,440	3,800	4,130	4,100	4,217	3,600	3,020	4,296	4,064	4,068	45,400
Oregon............	21	1	-	-	-	-	2	-	-	-	-	-	-	3
Texas.............	-	-	-	-	-	-	-	-	-	-	8	8	8	24
Utah..............	31,678	2,665	3,045	3,440	3,275	3,435	3,100	2,455	1,965	2,710	2,690	2,920	2,900	34,600
Washington........	14,807	1,754	1,529	1,743	1,456	1,508	1,595	1,557	1,628	1,464	1,683	1,543	1,683	19,143
	366,750	34,792	33,041	36,370	34,467	34,914	33,571	31,908	30,594	28,062	34,526	32,832	33,051	398,128
laska 2/.........	6	-	1	-	-	-	-	-	-	-	-	-	-	1
otal United States	623,375	59,772	54,575	60,564	56,257	58,779	56,546	53,126	54,364	50,118	60,546	57,195	57,269	679,111
ily average 3/...	1,708	1,928	1,949	1,954	1,875	1,896	1,885	1,714	1,754	1,671	1,953	1,907	1,847	1,861

Revised figures. 2/ Alaska monthly totalsbased on smelter receipts. 3/ Based on number of days in the month without adjustment for Sundays and holidays.

erior-Duplicating Section, Washington, D. C.

In the Magdalena district, Socorro County, the Lynchburg mine of the New Jersey Zinc Co. and the Waldo group of the American Smelting & Refining Co. (both operated by lessees) and the Nitt mine shipped zinc-lead ore to custom mills at Deming.

Texas. - Texas produced 24 tons of recoverable zinc in 1951, its source being the lead-zinc-silver ores of the Sierra Blanca region, inactive during 1950. The slag fuming plant of the American Smelting & Refining Co., El Paso works, continued to treat old accumulated zinc-bearing slags along with current hot slags. Specific data on the quantity of zinc recovered from these slags are not available, hence are not included in the State's production.

Utah. - Utah produced about 34,600 tons of recoverable zinc in 1951, an increase of 9 percent over 1950. This gain resulted mainly from expanded output of zinc-lead ore from the United States and Lark property at Bingham and from the New Park, Park Utah Consolidated, and Silver King Coalition properties in the Park City region. Approximately 97 percent of the total was recovered from zinc-lead ore, the remainder chiefly from zinc ore and old slag. About 54 percent of the State zinc output came from the West Mountain (Bingham) district, 30 percent from the Park City region, and 10 percent from the Tintic district. The United States Smelting, Refining & Mining Company's United States & Lark mine remained by far the largest producer in the State; it was followed by the New Park Mining Co. property, the Park City Consolidated Mining Co. property, the Chief Consolidated Copper Co. mine, the Butterfield Mining Co. Butterfield group, the Silver King Coalition Mining Co. mine, and the Calumet Mining Co., West Calumet mine.

Washington. - Washington produced a record 19,143 tons of recoverable zinc in 1951, 29 percent more than the previous high established in 1950. Greatly increased tonnages of ore mined in all the major mines (except the Howe Sound Co. Holden mine) accounted for the high output. A scarcity of skilled miners in the Metaline district prevented the production of sufficient ore to permit continuous operation of the Pend Oreille Mines and Metals Co. 600-ton Josephine mill; only the new 800-ton East mill unit was in use for several weeks during the fall months. The leading producers were the American Zinc, Lead & Smelting Co. Grandview mine, Pend Oreille Mines & Metals Co. mine, Goldfield Consolidated Mines Co. Deep Creek and Anderson mines, and the Howe Sound Co. Holden mine.

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MINERAL MARKET REPORT
MMS NO. 2051

ABRASIVE MATERIALS IN 1950

The year 1950 was one of increased activity in nearly all branches of the abrasive industry. New records were made in the domestic production of tripoli, ground sand and sandstone, pumice and pumicite, and garnet. Certain of the abrasive products for which figures are given also have important non-abrasive uses.

Salient statistics of the abrasives industries in the United States, 1949-50

	1949		1950		Percent of change in 1950	
	Short tons	Value	Short tons	Value	Short tons	Value
Natural abrasives (domestic) sold or used by producers:						
Diatomite	(1/)	(1/)	(1/)	(1/)	----	----
Tripoli	25,525	$690,564	43,720	$1,173,647	+71	+70
Quartz	107,552	475,491	160,508	706,724	+49	+49
Ground sand and sandstone	610,789	5,258,464	750,673	6,462,503	+23	+23
Grindstones	4,479	244,704	4,435	230,462	- 1	- 6
Pulpstones	28	1,975	33	2,100	+18	+ 6
Millstones	(2/)	9,400	(2/)	11,300	----	+20
Tube-mill liners	1,166	47,093	1,523	62,535	+31	+33
Grinding pebbles	2,374	64,038	1,923	53,007	-19	-17
Pumice and pumicite	716,742	2,369,082	719,356	2,661,052	(3/)	+12
Garnet	6,578	505,231	9,304	793,558	+41	+57
Emery	4,909	60,917	5,949	75,308	+21	+24
Artificial abrasives:						
Silicon carbide-production 4/	67,539	6,055,763	65,004	7,303,671	- 4	+21
Aluminum oxide-production 4/	125,806	8,500,074	140,352	11,958,035	+12	+41
Metallic abrasives (steel shot and grit) shipments	104,778	9,312,368	144,333	11,699,764	+38	+26
Foreign trade (natural and artificial abrasives):						
Imports	-------	5/26,389,394	-------	47,071,270	---	+78
Exports	-------	17,447,399	-------	16,188,782	---	- 7

See footnotes on following page.

Prepared by Henry P. Chandler and G. E. Tucker, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

1/ Average annual figure for 1948-50 was 240,890 short tons valued at $6,153,780; Bureau of Mines not at liberty to publish annual data separately.
2/ Tonnage not recorded.
3/ Less than 0.5 percent.
4/ Includes Canadian production.
5/ Revised figure.

Diatomite. - During 1950 the production of prepared diatomite continued to increase. The average production for this 3-year period, 1948-50, was 240,890 short tons valued at $6,153,780. Current production figures may not be published. Producing States were California, Nevada, Oregon, and Washington, with California the largest diatomite producer.

Tripoli. - The sales of tripoli, amorphous silica, and rottenstone totaled 43,720 short tons valued at $1,173,647 in 1950, an increase of 71 percent in tonnage and 70 percent in value over 1949. It was produced in Illinois, Missouri and Pennsylvania.

Tripoli[1] sold or used by producers in the United States, 1944-47 and 1948-50, by uses

Year and use	Short tons	Value	Year and use	Short tons	Value
1944	18,425	$301,863	1949: Abrasives	20,972	$587,241
1945	18,247	306,829	Filler	2,820	53,938
1946	28,955	549,099	Foundry facing, etc.	1,733	49,385
1947	34,578	751,422	Total	25,525	690,564
1948: Abrasives	22,193	606,402	1950: Abrasives	34,865	968,497
Filler	2,723	45,000	Filler	6,744	147,379
Foundry facing, etc.	1,929	54,121	Foundry facing, etc.	2,111	57,771
Total	26,845	705,523	Total	43,720	1,173,647

[1] Including Pennsylvania rottenstone.

Quartz. - Total sales of crude, crushed, and ground quartz from pegmatite veins or dikes and from quartzite in 1950 amounted to 160,508 short tons valued at $706,724, an increase of 49 percent both in tonnage and value over the preceding year. The sales of crude quartz were less than in 1949, but sales of crushed and ground quartz were the largest on record. Sales of quartzite to cement mills and certain sales of quartz or quartzite for use in the manufacture of ferrosilicon are not included in the accompanying statistics.

Quartz (crude, crushed, and ground)[1/] sold or used by producers in the United States, 1946-50

Year	Crude		Crushed		Ground		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1946----------	38,587	$107,069	29,228	$109,437	5,364	$77,346	73,179	$293,852
1947----------	21,940	118,231	62,169	170,254	17,208	136,040	101,317	424,525
1948----------	41,081	250,184	104,496	374,781	16,284	125,702	161,861	750,667
1949----------	15,816	74,562	72,432	257,213	19,304	143,716	107,552	475,491
1950----------	11,062	52,591	117,499	430,256	31,947	223,877	160,508	706,724

1/ To avoid duplication, the ground material shown here is only that ground by the original producers of the crude quartz or by grinders who purchase from small miners not reporting their production.

Ground sand and sandstone. - The year 1950 was a record one in the sales of ground sand and sandstone; they amounted to 750,673 short tons valued at $6,462,503. Illinois was the largest producer. Uses of ground sand and sandstone in 1950, according to companies reporting 93 percent of total sales, were as follows: Pottery, porcelain and tile industries (38 percent), abrasive industries, chiefly cleansing and scouring compounds (21 percent), foundries (13 percent), fillers (11 percent), enamel (4 percent), and other (13 percent).

Ground sand and sandstone sold or used by producers in the United States, 1946-50

Year	Short tons	Value	Year	Short tons	Value
1946----------	575,888	$4,125,398	1949----------	610,789	$5,258,464
1947----------	1/644,508	1/ 5,154,264	1950----------	750,673	6,462,503
1948----------	1/692,773	1/ 5,778,277			

1/ Revised figure.

Abrasive sands. - Considerable tonnages of natural sands with a high silica content are sold for abrasive purposes, such as glass grinding, stone polishing, coating sandpaper, and sand blasting. Sales of such sands in 1950 totaled 1,299,760 short tons valued at $2,670,791, an increase of 20 percent in tonnage and 29 percent in value over the previous year. The 1950 figures include 470,717 short tons of blast sand valued at $1,463,623.

Pumice and pumicite. - Pumice and pumicite (volcanic ash) sold or used totaled 719,356 short tons valued at $2,661,052, which was a slight increase in tonnage and a 12 percent increase in value over the preceding year. Its use as a concrete admixture and concrete aggregate continued to be its largest commercial outlet.. About 93 percent of the total produced was consumed for that purpose. Abrasive uses amount to 4 percent. Production of pumice or pumicite was reported from 14 States; the largest producing State was New Mexico with California second.

Pumice and pumicite sold or used by producers in the United States, 1948-50, by uses

Use	1948		1949		1950	
	Short tons	Value	Short tons	Value	Short tons	Value
Abrasive:						
Cleansing and scouring compounds and hand soaps	16,005	$245,994	15,926	$188,823	15,362	$198,053
Other abrasive uses	4,508	251,828	8,077	320,017	12,214	410,243
Acoustic plaster	3,612	109,498	10,018	182,990	6,662	151,766
Concrete admixture and concrete aggregate	559,697	1,665,727	672,592	1,559,587	672,125	1,750,269
Other uses 1/	23,924	228,859	10,129	117,665	12,993	150,721
Total	607,746	2,501,906	716,742	2,369,082	719,356	2,661,052

1/ Insecticide, insulation, brick manufacture, filtration, solvents, plastics, paint filler, absorbents, and unspecified.

Garnet. - Garnet production in 1950 was 9,304 short tons valued at $793,558, the largest on record. Sales of the fine sizes of garnet to the optical and other industries has increased during the past year.

Abrasive garnet sold or used by producers in the United States, 1945-50

Year	Short tons	Value	Year	Short tons	Value
1945	6,306	$375,198	1948	8,039	$587,797
1946	7,743	570,186	1949	6,578	505,231
1947	8,722	614,071	1950	9,304	793,558

Corundum. - South Africa continues to be the source of nearly all the corundum used in the United States, 3,543 short tons being imported during 1950 compared with 2,013 short tons in 1949.

Emery.- Production of emery during 1950 was 5,949 short tons valued at $75,308, an increase of 21 percent in quantity and 24 percent in value over 1949. A large part of the domestic output is used as a non-skid agent in concrete floors and steps. Imports of emery ore into the United States in 1950 totaled 1,726 short tons.

Industrial diamonds. - World production of industrial diamonds in 1950 was approximately 12,590,000 carats, an increase of 15 percent over 1949. Of this amount some 9,900,000 carats were mined in the Belgian Congo. Total imports into this country of all classifications of industrial diamonds in 1950 were 10,967,005 carats, valued at $35,445,506, an increase of 72 percent by weight and 100 percent in value over the 1949 figure. The United States Government continued to purchase industrial diamonds for the National stockpile.

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MINERAL MARKET REPORT
MMS No. 2052

PHOSPHATE ROCK INDUSTRY OF THE UNITED STATES IN FIRST HALF OF 1951

Although total mine production of phosphate rock in the United States decreased 8 percent to 5,261,558 long tons in the first half of 1951, according to reports of producers to the Bureau of Mines, United States Department of the Interior, and the amount sold or used during this period increased more than 4 percent to 5,558,503 long tons, producers' stocks as reported were slightly higher on June 30, 1951 than on the corresponding date in 1950. The total value rose over 2 million dollars above that of 1950, with the average value per ton rising to $6.00.

Phosphate rock was mined in Florida, Tennessee, Idaho, Montana, and Wyoming during the first 6 months of 1951. Florida continues to be the leading shipper with an increase of 135,000 long tons and with total shipments more than 6 times those of Tennessee. The total value of the shipments of all kinds of Florida rock increased in the first half of 1951 over the January-June period of 1950. The average value of Florida land pebble and hard rock rose while that of soft rock dropped. The quantity of Tennessee phosphate rock sold or used in the first half of 1951 decreased over 35,000 long tons, while value rose over $200,000 more than in January-June 1950. The data for the Western States (partly estimated) have been grouped together to avoid disclosure of individual returns. Western States' sales were greater in the first half of 1951 than in January-June 1950, but the average value decreased.

Prepared by Bertrand L. Johnson and Nan C. Jensen, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division.

Salient statistics of the phosphate-rock industry in the United States,
January - June, 1950 and 1951

	1950				1951			
	Long tons		Value at mines		Long tons		Value at mines	
	Phosphate rock	P_2O_5 content	Total	Average	Phosphate rock	P_2O_5 content	Total	Average
Production (mined)	5,720,767	1,855,288	(1/)	(1/)	5,261,551	1,698,350	(1/)	(1/)
Sold or used by producers:								
Florida:								
Land pebble...........	4,164,831	1,407,230	$23,271,209	$5.59	4,285,677	1,452,722	$25,318,770	$5.91
Soft rock.............	36,899	7,482	180,844	4.90	43,896	8,984	208,814	4.76
Hard rock.............	32,315	11,388	246,869	7.64	39,734	14,002	305,603	7.69
Total Florida.......	4,234,045	1,426,100	23,698,922	5.60	4,369,307	1,475,708	25,833,187	5.91
Tennessee 2/..........	784,360	220,595	5,280,328	6.73	747,562	204,386	5,517,803	7.38
Idaho and Wyoming 3/....	183,321	56,040	904,458	4.93	441,634	129,801	2,001,179	4.53
Montana................	112,210	29,297	772,417	6.88				
Total United States.	5,313,936	1,732,032	30,656,125	5.77	5,558,503	1,809,895	33,352,169	6.00
Stocks in producers' hands June 30:								
Florida................	1,048,000	319,000	(1/)	(1/)	920,000	307,000	(1/)	(1/)
Tennessee 2/ 4/........	604,000	170,000	(1/)	(1/)	561,000	160,000	(1/)	(1/)
Western States.........	231,000	65,000	(1/)	(1/)	442,000	118,000	(1/)	(1/)
Total stocks	1,883,000	554,000	(1/)	(1/)	1,923,000	585,000	(1/)	(1/)

1/ Data not available.
2/ Includes brown-rock matrix of sinter-grade and sintered brown rock.
3/ Includes Utah in 1950.
4/ Does not include plant stocks of washer-grade matrix.

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MINERAL MARKET REPORTS
MMS. NO. 2053

IRON ORE IN 1951 - PRELIMINARY

Production and shipments of iron ore from United States mines assumed impressive proportions in 1951 with a record high output estimated to be 116,430,000 gross tons, according to the Bureau of Mines, United States Department of the Interior. The industry enjoyed a strong demand throughout the year, and labor disputes hampered operations relatively little. All districts increased production and shipments, but Western States achieved the largest percentage increase. Compared with 1950, overall production and shipments from mines (116,570,000 tons) increased 19 percent each. The highest totals previously recorded were in 1942 when 105,526,195 gross tons were produced, and 105,988,514 tons shipped.

The Lake Superior region maintained its preeminent position as the leading producing district with 80.7 percent of the total, as compared with 81.2 percent in 1950. Southeastern States, notwithstanding a substantial increase in output, declined slightly to 7.2 percent as compared with 7.7 percent in 1950. Northeastern States, with a record high output, declined from 4.6 percent in 1950 to 4.4 percent in 1951. Western States achieved the only gain in relative position. From 6.0 percent of the total supply in 1950, these States rose to 7.2 percent in 1951.

The total value of 1951 iron ore shipments was estimated to be $650 millions, an average of $5.58 per ton, as compared to $4.99 in 1950, and $4.50 in 1949. This value applies to ore at the mine before loading for shipment to consumers, and should approximate all costs, royalties, and taxes to that point with a reasonable profit for the operator.

In addition to the above totals, an estimated 850,000 tons of ore containing 5 - 35 percent manganese (natural), were shipped from mines in Arkansas, Minnesota, Montana, and New Mexico. Minnesota's Cuyuna range supplied the bulk of this material.

Of the 16 states reporting iron ore production during 1951, Minnesota led with 68 percent of the total, Michigan was second with 12 percent, and Alabama third with 7 percent. An additional 3 states, Delaware, Tennessee, and Virginia produced 640,000 tons of byproduct iron ore obtained from treating pyrites.

Mine stocks of ore were 5,760,000 tons at the end of the year, and consumers' stocks of ore and sinter were 44,830,000 tons.

Lake Superior District - Output from the World's foremost iron ore producing district approached the 100 million ton level in 1951 with 93,950,000 gross tons of usable ore containing less than 5 percent manganese (natural) from United States ranges. Shipments from United States and Canadian ranges, including

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Prepared by Norwood B. Melcher and Jachin M. Forbes, under the supervision of Robert H. Ridgway, Chief, Ferrous Metals and Alloys Branch, Minerals Division.

manganiferous ore, were 89,092,012 tons by water, and an estimated 7,916,000 tons all-rail, a total of 97,008,000 tons of ore, according to the Lake Superior Iron Ore Association. This total is 4 percent above the previous high of 93,495,392 tons in 1942.

The 1951 Lake navigation season was opened by the steamer, Joseph Sellwood which sailed from Escanaba, on April 6. Marquette opened on April 9, and Duluth, Two Harbors, and Superior on April 11. Shipments were heavy throughout the season with no significant work stoppages until an early cold wave struck the region in November. Loading at the docks was slowed almost to a standstill early in the month and again in the last week. Shipments continued, however, until December 10, and Upper Lake ports were closed after the departure of the steamers Thomas Lynch, and D. M. Clemson, on that date. All-rail movement of iron ore from United States mines in the Lake Superior region to furnaces normally served by water transportation, and furnaces at Duluth, Minnesota, and Granite City, Illinois, normally served by all-rail transportation, rose to 7,550,000 million tons as compared with 3,686,182 tons in 1950, an increase of 105 percent.

Important developments in the Lake Superior district during 1951 affecting future production include the construction of several new plants employing established methods of beneficiation such as washing, Humphrey's spirals, and heavy-media separation; and plans for three major independent operations aimed at commercial production of taconite concentrates. These plans are now being activated by The Erie Mining Co., Oliver Iron Mining Division of the United States Steel Corp., and Reserve Mining Co. Indications are that they will be subject to considerable demand pressure for commercial production as soon as possible.

Southeastern States - Production and shipments of iron ore from Alabama, Georgia, and Virginia during 1951 were an estimated 8,420,000 gross tons each; not record highs, but 12 percent, and 11 percent, respectively, above 1950. Work stoppages in Alabama during February, October, and November, totaling approximately 30 days, reduced overall production to some degree, but it is doubtful if the record high of 9,159,228 tons produced in 1942 would have been equalled in any event. The product in the Southeastern states is predominantly red hematite mined near the furnaces, with brwon ores, mined for blending with the red ores, constituting less than 15 percent of the total. Additional small tonnages of both hematite and hydrated oxides of iron are mined for the paint industry.

Northeastern States - New Jersey, New York, and Pennsylvania increased production 13 percent from 4,478,834 tons in 1950 to 5,070,000 tons in 1951. Shipments rose 21 percent to 5,620,000 tons as mine stocks were gradually reduced during the year. The increases were attributable to additional operating time rather than new facilities. However, considerable attention was given to a better recovery of the non-magnetic component of the Adirondack ores. In addition to tabling rejects from magnetic separators, one mill has installed a section of Humphrey's spirals to improve recovery of martite, as the non-magnetic iron mineral is termed.

Western States - Iron mines in California, New Mexico, Missouri, Nevada, Utah, and Wyoming increased production to an estimated 8,350,000 tons in 1951, a rise of 42 percent above the 5,860,755 tons in 1950. In addition to an increased demand for ore to supply United States furnaces, the export trade to Japan was revived and accounted for 954,842 tons of the increase. Missouri ore included in this group was consumed by furnaces east of the Mississippi River.

Utah supplied 57 percent of Western production, and California and Texas about 15 percent, each. Wyoming accounted for 7 percent, and 5 percent in total came from New Mexico, Nevada, and Missouri.

Byproduct Ore - Production of pyrites sinter and cinder increased 11 percent to an estimated 640,000 tons; and shipments which exceeded production throughout the year, increased 9 percent to 670,000 tons. This material is a residue of iron pyrites after roasting in a process for manufacturing sulfuric acid. It is sintered in order to obtain a suitable physical structure for iron and steel furnaces.

Foreign Trade - Receipts of iron ore from foreign sources totaled 10,146,199 gross tons, 23 percent above 1950. Chile was the largest supplier with 27 percent of the total, followed closely by Sweden with 25 percent. Canada supplied 19 percent; Brazil, 10 percent; Venezuela, 6 percent, Algeria, 5 percent; and 8 percent in total came from British West Africa, Cuba, Iran, Liberia, Mexico, Spanish Africa, Spain, Tunisia, Union of South Africa and the United Kingdom.

Canada received 3,349,602 gross tons of the iron ore exported from the United States, 1,383,488 tons more than was shipped to the United States. This relationship will be reversed strongly when the Quebec-Labrador deposits become operational. Japan received 954,842 tons from mines in California, Nevada, and Utah; and small lots (926 tons in total) were shipped to Australia, Brazil, the Canal Zone, Mexico, Norway, Republic of the Philippines, and the United Kingdom. The small shipments included iron oxide pigments and ore samples for experimental purposes. In all, 4,305,370 gross tons of iron ore were exported during 1951.

Estimates of Iron Ore Produced and Shipped in the United States in 1951 and Actual Output in 1950

District and State	Ore Produced		Ore Shipped			
	1950	1951	1950		1951	
	Gross tons	Gross tons	Gross tons	Value	Gross tons	Value
Lake Superior:						
Michigan	12,691,101	13,520,000	12,821,344	$72,358,822	13,390,000	$521,000,000
Minnesota	65,234,555	78,680,000	64,538,759	311,716,341	78,480,000	
Wisconsin	1,701,638	1,750,000	1,701,619	(1)	1,740,000	
Total	79,627,294	93,950,000	79,061,722	(1)	93,610,000	521,000,000
Southeastern States:						
Alabama	7,299,744	8,150,000	7,402,208	28,932,801	8,150,000	38,000,000
Georgia	202,427	270,000	202,427	677,248	270,000	
Virginia	5,337		5,245	(1)		
Total	7,507,508	8,420,000	7,609,880	(1)	8,420,000	38,000,000
Northeastern States:						
New Jersey	586,347	670,000	588,199	5,651,563	670,000	58,000,000
New York	2,772,149	3,040,000	2,917,257	27,914,818	3,590,000	
Pennsylvania	1,116,338	1,360,000	1,116,338	11,626,216	1,360,000	
Total	4,474,834	5,070,000	4,621,794	45,192,597	5,620,000	58,000,000
Western States:						
Utah	3,139,926	4,720,000	3,111,167	5,746,808	4,640,000	28,000,000
California	831,445	1,230,000	849,489	9,480,839	1,220,000	
Texas	1,182,147	1,350,000	1,189,415		1,350,000	
Wyoming	491,906	610,000	491,906		610,000	
Other	215,331	440,000	215,331		430,000	
Total	5,860,755	8,350,000	5,857,308	15,227,647	8,250,000	28,000,000
Byproduct Ore 2/	574,969	640,000	613,706	4,632,274	670,000	5,000,000
Grand Total	98,045,360	116,430,000	97,764,410	$487,990,404	116,570,000	$650,000,000

1/ Included in Grand Total.

2/ Obtained from treating pyrites in, but not necessarily mined in Delaware, Tennessee, and Virginia.

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MINERAL MARKET REPORT
MMS NO. 2054
(Replaces December monthly report No. 12)

TIN IN 1951
(PRELIMINARY ANNUAL FIGURES)

Total domestic consumption of tin decreased 17 percent in 1951 according to the Bureau of Mines, United States Department of the Interior. Preliminary figures for 1951 based upon monthly report Form NPAF-7 show the use of primary tin was 21 percent and of secondary 6 percent less than in 1950. The total consumed in manufacturing in 1951 was 87,952 long tons (56,542 of primary - including 592 tons contained in Copan produced by the Texas City smelter - and 31,410 of secondary). In 1950, tin consumption in manufacturing totalled 105,796 tons - of which, 71,191 was primary, 33,273 secondary, and 1,332 tons plant losses. Consumption was at its highest rate during the first quarter, and at its lowest rate during the last quarter, during which the December total was only 6,262 tons, comprising 4,114 of primary and 2,148 of secondary. Tin controls (Order M-8) were resumed and were in effect throughout 1951. The order limited monthly use and placed tin supplies under allocation by National Production Authority, commencing May 1, 1951.

Five items - tin plate, solder, bronze, babbitt and tinning - accounted for most of the tin consumed in 1950 and 1951. Tin platers, the largest consumers of primary tin decreased their use 12 percent, and solder, next in rank required 28 percent less than in 1950. Usage for babbitt and tinning both declined 16 percent. The manufacture of bronze was the only item which increased (7 percent) its use of tin. In respect to total tin used in 1951, bronze resumed its position as the second largest user.

Tin stocks held by the Government (RFC) and industry - comprising pig tin, tin in ore, raw materials in process, and other (excluding metal afloat to the United States) - dropped from 72,887 long tons at the beginning of 1951 to 39,975 at the end. During 1951, pig tin stocks were depleted 23,256 long tons, which was equivalent of 41 percent of domestic consumption of primary tin during the year. Pig tin inventories, excluding the strategic stockpile, amounted to 17,907 tons on December 31, 1951. December withdrawals were 2,466 tons at which rate pig tin stocks would last 7 months. Although imports, and consumption of primary tin nearly balanced in 1951, withdrawals from industry and RFC stocks were necessary because tin brought into the country was mostly committed to the stockpile against previous procurement contracts.

Prepared February 20, 1952, by Abbott Renick and John B. Umhau, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Imports of metallic tin in 1951 were 66 percent less than in 1950, mainly because no Malayan tin was shipped to the United States after March. Of the total imports, 45 percent came from the Netherlands, 25 percent from Malaya, 23 percent from Belgium and the Belgian Congo, and the remainder from other sources. Receipts of ore in terms of metal were 13 percent greater than in 1950, principally owing to substantial gain in imports from Indonesia. Bolivia was the main source of tin ore, accounting for 44 percent of the total, but furnished only 12,869 tons in 1951, or 11 percent less than in 1950. Bolivia has been the source of two-thirds of the tin in ores imported from 1941 to 1951, inclusive. Imports from Bolivia in 1951 were the smallest for any year since the tin smelter was put into operation at Texas City, Texas in 1942.

Exports of metallic tin in 1951 were 1,513 long tons (the highest since 1943) with Canada as the destination of nearly 90 percent.

The Government-owned smelter at Texas City, Texas, produced 31,526 long tons of tin in 1951, compared with 32,757 tons in 1950. These figures include the tin content of Copan and a small tonnage of secondary tin recovered from industrial dross. In December, the plant produced 1,805 long tons of 3-Star (1,806 in November) and 25 tons of Copan (50 in November) from concentrates. Domestic mine production of tin was negligible in 1951.

The RFC selling price for tin was $1.03 a pound throughout December. The average price of tin at New York in 1951 was $1.283, the highest of record. The price on the regular New York market reached $1.84 on January 25, 1951, or highest price ever recorded.

World mine production of tin decreased in 1951. Preliminary figures show that the total output was 164,800 long tons in 1951 compared with 166,400 in 1950. In 1951 the tin fields of Malaya accounted for 35 percent of the total, Bolivia 20 percent, Indonesia 19 percent, Belgian Congo 8 percent, Thailand (Siam) 6 percent, Nigeria 5 percent, and all the remaining sources 7 percent.

TIN: Receipts, consumption and stocks in 1950
and in November and December and 12 months of 1951, in long tons.

		1951		
INDUSTRIAL PLANTS	1950	Total	Nov	Dec
Stocks beginning of period	24621	31856	20306	21205
Receipts	115199	78775	7818	5550
Supply	139820	110631	28124	26755
Stocks end of period	31856	20287	21205	20287
Total processed	107964	90344	6919	6468
Intercompany scrap transactions	2168	2984	211	206
Consumed in manufacturing	105796	87360[1]	6708	6262
Primary	71191	55950[2]	4266	4114
Secondary	33273	31410	2442	2148
Plant losses	1332	[3]	[3]	[3]

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[1] Preliminary.

[2] Excluding 592 tons of tin in Copan alloy produced by Texas City tin smelter.

[3] Not separately reported.

Tin stocks at end of 1950 and of November

and December 1951, in long tons.

		1951	
	1950	Nov	Dec
GRAND TOTAL	72887	43488	39975
INDUSTRY TOTAL	33985	22088	21344
At plants - total	31856	21205	20287
Pig tin	20806	11182	10097
In process	11050	10023	10190
Other pig tin - total	2129	883	1057
In transit in U.S.	1355	730	975
Jobbers - importers	384	153	82
R.F.C. sales (undelivered)	390	1/	1/
GOVERNMENT (RFC) TOTAL	38902	21400	18631
Pig tin	18228	8308	6753
Ores - total (tin content)	20674	13092	11878
In foreign ports or afloat in U.S.	5606	2323	1107
In U.S.	15068	10769	10771

1/ Not separately reported.

TIN CONSUMPTION IN THE UNITED STATES

in 1950 and 1951, in long tons.

Product	1950			1951 1/		
	Primary	Secondary	Total	Primary 2/	Secondary	Total
TIN PLATERS						
Hot dip)	35380	-	35380	18572	-	18572
Electrolytic)				12813	-	12813
Terne metal	349	603	952	125	362	487
Total	35729	603	36332	31510	362	31872
OTHER INDUSTRIES						
Solder	18343	9117	27460	13938	5970	19908
Babbitt	3501	2908	6409	2737	2623	5360
Bronze	4178	16416	20594	5437	16592	22029
Collapsible tubes & foil	1438	228	1666	938	115	1053
Tinning	2797	179	2976	2478	11	2489
Pipe & tubing	383	57	440	146	110	256
Type metal	184	1796	1980	146	1555	1701
Chemicals incl. tin oxide	869	847	1716	657	497	1154
Miscellaneous	3769	1122	4891	1369	169	1538
Sub-total	71191	33273	104464	59356	28004	87360
Secondary pig tin	-	-	-	-3406	+3406	-
TOTAL	71191	33273	104464	55950	31410	87360

1/ Preliminary.
2/ Distribution of primary includes 3406 ton of secondary not separable by uses; adjustment made in total.

Tin consumption in the United States in the third and fourth quarters of 1951

and November and December 1951, in long tons.

PRODUCTS	Third Quarter			Fourth Quarter			Nov			Dec		
	Primary	Secondary	Total	Primary	Secondary	Total	Primary	Secondary	Total	Primary	Secondary	Total
TIN PLATERS												
Hot dip	5122	-	5122	4108	-	4108	1271	-	1271	1280	-	1280
Electrolytic	3193	-	3193	3290	-	3290	1061	-	1061	1068	-	1068
Terne metal	8	108	116	10	49	59	-	14	14	10	20	30
Total	8323	108	8431	7408	49	7457	2332	14	2346	2358	20	2378
OTHER INDUSTRIES												
Solder	3071	1035	4106	3180	1114	4294	1124	363	1487	1029	325	1354
Babbitt	581	603	1184	668	698	1366	197	252	449	204	204	408
Bronze	1288	3626	4914	1310	3827	5137	458	1345	1803	371	1200	1571
Collapsible tubes & foil	174	20	194	157	27	184	64	9	73	40	14	54
Tinning	570	-	570	569	-	569	185	-	185	181	-	181
Pipe & tubing	23	24	47	36	40	76	10	4 1/	14 1/	11	10	21
Type metal	56	384	440	35	449	484	11	146 1/	157 1/	14	163	177
Chemicals incl tin oxide	152	102	254	165	92	257	57	39 1/	96 1/	17	26	43
Miscellaneous	299	24	323	214	19	233	92	6	98	66	9	75
Sub-total	14537	5926	20463	13742	6315	20057	4530	2178	6708	4291	1971	6262
Secondary Pig tin	-779	+779		-713	+713		-264	+264		-177	+177	
TOTAL	13758	6705	20463	13029	7028	20057	4266	2442	6708	4114	2148	6262

1/ Revised.

Tin imported for consumption in the United States and exported, in 1950 and 1951
by months, by countries, in long tons.[1]

		1951												
	1950	Total	Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
ORE (tin content)														
Belgian Congo	1526	**1585**	-	-	-	-	391	-	446	-	-	398	-	350
Bolivia	14419	12869	2865	1592	1271	956	58	1989	1564	437	-	2027	66	44
Indonesia	6925	11684	1196	1183	1347	895	752	869	354	1630	403	1592	554	904
Siam	2457	3114	470	144	134	338	117	51	267	358	166	528	20	521
Other	633	152	14	3	1	15	31	15	32	5	22	-	14	-
TOTAL	25960	29404	4545	2927	2753	2204	1349	2924	2663	2430	591	4545	654	1819
METAL														
Belgian Congo	1506	915	100	250	50	-	-	-	515	-	-	-	-	-
Belgium	8137	5377	516	30	831	674	272	351	997	449	670	426	62	99
China	1665	55	16	10	10	11	8	-	-	-	-	-	-	-
Malaya	54018[2]	6975	3782	888	1967	325	-	-	13	-	-	-	-	-
Netherlands	7667[2]	12505	1260	736	1027	1104	839	1435	630	581	1084	1465	933	1411
United Kingdom	8456[2]	1316	142	349	318	83	77	76	166	142	111	78	193	81
Other	1388[2]	141	20	-	22	76	17	6	-	-	-	-	-	-
TOTAL	82837	27784	5836	2263	4225	2273	1213	1868	2321	1172	1865	1969	1188	1591
TIN METAL EXPORTS	799	1513	196	207	344	269	38	66	34	16	62	48	108	125

[1] Compiled from records of the U.S. Department of Commerce
[2] Revised

Pig tin and copan production in 1950 and in 1951 by months, in long tons.

PIG TIN														
Texas City Smelter	32757	31526[1]	3211	3096	3123	3058	3059	2655	2406	2505	2155	2055	1806	1805
Other plants (secondary)	4083	3690	360	333	376	344	374	352	301	267	270	272	264	177
Copan production (Texas City Smelter)	743	752	-	39	51	151	86	101	100	-	100	49	50	25

[1] Includes tin content of Copan.

Interior - Duplicating Section, Washington, D.C.

- TIN -

World mine production in 1950 and 1951
(content of ore) in long tons

COUNTRY	1950	1951
Malaya	57537	57168
Indonesia	32099	30984
Burma	1682	10500
Thailand	10364	
Nigeria	8258	8550
Belgian Congo	13700	12923
Bolivia	31213	33130
Others	11547	11545
TOTAL	166400	164800

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary   J. J. FORBES, Director

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MINERAL MARKET REPORT
MMS No. 2055

MAGNESITE AND OTHER MAGNESIUM COMPOUNDS - 1950

Domestic production of crude magnesite as well as refractory magnesia and dead-burned dolomite was greatly increased during 1950 as a result of expansion in the steel industry. Further expansions were being planned as a result of anticipated increase in steel making capacity. Industrial activity, accelerated by the defense program, resulted in increased production of other magnesium compounds such as the high grade magnesias and magnesium chloride.

Salient statistics of magnesite, magnesia, and dead-burned dolomite in the United States, 1947-50

	1947	1948	1949	1950
Crude magnesite:				
Mined:				
Short tons............	375,993	(1/)	287,315	429,392
Value 2/..............	$2,596,747	(1/)	$1,950,153	$3,091,135
Caustic-calcined magnesia:				
Sold or used by producers:				
Short tons............	26,831	33,209	32,505	41,447
Value.................	$2,508,624	$3,380,528	$3,109,381	$4,136,898
Average per ton 3/...	$93.50	$101.80	$95.66	$99.81
Refractory magnesia:				
Sold or used by producers:				
Short tons............	314,921	330,069	250,389	335,440
Value.................	$10,127,585	$13,444,587	$10,477,856	$14,915,854
Average per ton 3/...	$32.16	$40.73	$41.85	$44.47
Dead-burned dolomite:				
Sold by producers:				
Short tons............	1,395,203	1,544,755	1,318,708	1,759,443
Value.................	$14,295,359	$17,847,182	$15,930,226	$21,725,560

1/ Bureau of Mines not at liberty to publish figure.
2/ Partly estimated; most of crude is processed by mining companies, and very little enters open market.
3/ Average receipts f.o.b. mine shipping point.

Prepared by Brooke L. Gunsallus and F. M. Barsigian under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division.

Sources from which magnesia is derived are shown in the following table.

Magnesia sold or used by producers in the United States, 1949-50, by kinds and sources

Magnesia	From magnesite, brucite, and dolomite 1/		From well brines, raw sea water, and sea-water bitterns 1/		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1949						
Caustic-calcined...	8,992	831,674	23,513	2,277,707	32,505	3,109,381
Refractory........	175,364	6,763,294	75,025	3,714,562	250,389	10,477,856
Total..........	184,356	7,594,968	98,538	5,992,269	282,894	13,587,237
1950						
Caustic-calcined...	6,418	740,369	35,029	3,396,529	48,447	4,136,898
Refractory........	232,283	9,358,483	103,157	5,557,371	335,440	14,915,854
Total..........	238,701	10,098,852	138,186	8,953,900	376,887	19,052,752

1/ Magnesia made from a combination of dolomite and sea water is included with that from sea water.

Other Magnesium Compounds

The high level of industrial activity was reflected in both production and sales of the light and heavy high-grade magnesias. A substantial increase in production of magnesium chloride was necessary to supply increased demand from the magnesium metal industry.

Specified magnesium compounds produced, sold, and used by producers in the United States, 1949-50

Product 1/	Plants 1/	Produced (short tons)	Sold 2/		Used (short tons)
			Short tons	Value	
1949					
Specified magnesias (basis 100 percent MgO), U.S.P. and technical:					
Extra-light and light	5	1,637	1,644	837,751	----
Heavy	3	933	949	395,994	(3/)
Total	4/ 5	-----	2,593	1,233,745	(3/)
Precipitated magnesium carbonate	10	55,925	7,273	924,299	48,641
1950					
Specified magnesias (basis 100 percent MgO) U.S.P. and technical:					
Extra-light and light	5	2,480	2,392	1,214,844	----
Heavy	3	1,850	1,734	513,586	(3/)
Total	4/ 5	-----	4,126	1,728,430	(3/)
Precipitated magnesium carbonate	10	54,633	7,389	1,134,499	47,153

1/ In addition, in 1949-50, magnesium chloride, hydroxide, nitrate, and sulfate were produced. Bureau of Mines not at liberty to publish figures.
2/ Sales by a producer to an affiliated consumer for immediate use are not included with "Sold" but are with "Used".
3/ Bureau of Mines not at liberty to publish figure.
4/ A plant producing more than 1 grade is counted but once in arriving at total.

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MINERAL MARKET REPORT
MMS NO. 2056

LEAD AND ZINC PIGMENTS AND ZINC SALTS IN 1951
(Preliminary Annual Report)

Moderate declines in shipments of lead and zinc pigments and zinc salts featured the industry in 1951, according to the Bureau of Mines, United States Department of the Interior. Decreases ranged from 8 percent for zinc oxide (lead-free) to 27 percent for leaded zinc oxide. Shipments of red lead and lithopone were approximately the same as in 1950. Zinc chloride and zinc sulfate shipments declined about 4 percent and 8 percent, respectively. Decreases in shipments of pigments and salts are attributed partly to decreases in the volume of business in industries that are important consumers of these products; passenger automobile production dropped 20 percent in 1951 (truck output rose 7 percent) and consumption of natural and synthetic rubber declined 3 percent (natural rubber fell 37 percent and synthetic rubber increased 41 percent) compared with 1950. The value of sales of varnish and lacquer materials was 5 percent greater than in 1950, value of public construction increased 27 percent, and value of private construction was approximately the same as in 1950. Paint and construction gains, of course, in part reflected rising material and labor costs.

The supply of lead and zinc, chief raw materials of the pigments industry, was smaller in 1951 than in 1950, and the demand for these metals continued high, causing a reduction in quantities available for the manufacture of pigments and partly accounting for the decreases in shipments of pigments. Ceiling prices were established for lead and zinc on January 26, 1951 at the highest price (for each seller) at which sales were made between December 19, 1950 and January 25, 1951. Thus a number of ceiling prices were maintained for both lead and zinc. The bulk of lead and zinc sales, however, were at 17 cents per pound and 17.50 cents, respectively. These prices were for common lead, New York, and Prime Western grade slab zinc, East St. Louis, and remained in effect until October 2, 1951 when the Office of Price Stabilization permitted rises of 2 cents per pound for both metals. Pigment prices are discussed under Prices.

The supply-demand situation in lead led to a National Production Authority Order, M-38, effective February 16, 1951, which set forth limitations on inventories of lead and materials containing lead, other than ores and concentrates. This order was amended on May 28 and again on July 26 to set forth certain limitations on the acceptance of rated orders so as to provide for the equitable distribution of such orders, provide for the creation of a set-aside reserve of pig lead to meet emergency situations, and establish limitations on the use of lead and lead products.

Prepared March 4, 1952 by Robert L. Mentch, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

National Production Authority Order, M-15, effective December 1, 1950, restricted the civilian use of zinc metal and zinc metal products in 1951 to an average quarterly rate of 80 percent of the use during the first 6 months of 1950. Rated orders and mandatory NPA orders were to be in addition to the civilian limitation. Inventories were restricted to a 45-day supply or to a "practicable minimum working inventory", whichever was less. This order was amended on June 15, 1951 to restrict use of Special High Grade zinc during the calendar quarter commencing July 1, and each calendar quarter thereafter, to an average quarterly rate of 70 percent of the use during the base period; usage of all other zinc was to be the same as stated in the earlier order. Under NPA Order M-9, effective November 16, 1950, producers of zinc, zinc oxide and other zinc products were not required to accept rated orders for shipment in one month in excess of 10 percent of production.

Some lead and zinc pigments and zinc salts shipped by domestic manufacturers in the United States, 1948-51, in short tons

	1948	1949	1950	1951
Basic lead sulfate or sublimed lead:				
White------------------	(1)	(1)	(1)	(1)
Blue-------------------	(1)	(1)	(1)	(1)
Red lead---------------	30,787	24,866	34,400	34,300
Orange mineral----------	------	------	------	------
Litharge---------------	154,775	121,052	169,300	149,000
White lead:				
Dry--------------------	26,551	15,719	28,300	23,300
In oil 2/--------------	19,519	11,636	16,100	12,200
Zinc oxide-------------	150,958	110,132	160,300	148,200
Leaded zinc oxide-------	67,441	36,722	61,500	44,600
Lithopone--------------	140,033	78,335	105,800	105,000
Zinc chloride, 50° B----	68,701	55,208	63,400	61,100
Zinc sulfate-----------	21,513	20,065	23,800	21,900

1/ Bureau of Mines not at liberty to publish figures.
2/ Weight of white lead only.

Shipments of white lead (dry) and of the "in oil" variety dropped 18 percent and 24 percent, respectively, from 1950 totals. Shipments of both classes, moreover, with the exception of 1949, were the smallest by far since long before the beginning of the present century. Litharge shipments decreased 12 percent in 1951 but were well above average yearly shipments during World War II. Shipments of red lead were approximately the same as in 1950 but were considerably lower than World War II years.

The largest consumers of industrial diamonds in this country are the manufacturers of diamond grinding wheels. Expanding use of cemented-carbide cutting tools increased the demand for these grinding wheels, and their successful application for glass grinding and concrete cutting have further extended their use in industry.

Industrial diamonds (glaziers', engravers', and miners') imported
for consumption in the United States, 1946-50
(U.S. Department of Commerce)

Year	Carats	Value		Year	Carats	Value	
		Total	Average			Total	Average
1946-	1/4,652,639	1/$14,406,137	1/$3.10	1949-	1/6,279,096	1/$17,392,288	$2.77
1947-	3,999,119	13,312,668	3.33	1950-	10,835,596	35,062,104	3.24
1948-	10,421,207	32,581,385	3.13				

1/ Revised figure.

Artificial abrasives. - The combined tonnage of aluminum oxide and silicon carbide, manufactured in the United States and Canada, in 1950 increased 6 percent, and its value increased 32 percent over the 1949 production. The figures for aluminum oxide for 1950 include 20,188 short tons of "white high-purity" material valued at $2,607,590, compared with 10,858 short tons valued at $1,178,290 in 1949. Manufacture of refractories consumed 2 percent of the aluminum oxide and 24 percent of the silicon carbide produced in 1950.

Crude artificial abrasives produced in the United States and Canada,
1946-50

Year	Silicon carbide1/		Aluminum oxide1/ (abrasive grade)		Metallic abrasives2/		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1946-	63,849	$5,457,903	132,084	$8,367,158	111,512	$6,387,819	307,445	$20,212,880
1947-	63,724	5,633,811	160,022	10,158,432	154,191	12,449,855	377,937	28,242,098
1948-	63,033	5,874,731	154,972	10,279,583	147,218	15,174,773	365,223	31,329,087
1949-	67,539	6,055,763	125,806	8,500,074	104,778	9,312,368	298,123	23,868,205
1950-	65,004	7,303,671	140,352	11,958,035	144,333	11,699,764	349,689	30,961,470

1/ Bureau of Mines not at liberty to publish data for United States separately. Figures include a small quantity used for refractories and other nonabrasive purposes.

2/ Shipments from United States plants only.

The output of metallic abrasives in the United States only during 1950 showed an increase of 38 percent in quantity and 26 percent in value over 1949.

Stocks of aluminum oxide decreased 56 percent, silicon carbide 60 percent and metallic abrasives 28 percent from the 1949 figures. There was little change in plant capacity for artificial abrasives between 1949 and 1950.

Miscellaneous mineral abrasive materials. - In addition to the natural and manufactured abrasive substances for which data are included herein, many other mineral materials are used for abrasive purposes, including various oxides and carbides, finely ground and calcined clays, lime, talc, ground feldspar, river silt, slate flour, and whiting.

Foreign trade. - The total value of imports for consumption of both natural and artificial abrasives during 1950 was 78 percent over the 1949 figure.

The value of exports of natural and artificial abrasives in 1950 declined 7 percent compared with 1949. Diamond grinding wheels, however, showed an increase in value of 56 percent over 1949.

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MINERAL MARKET REPORT
MMS. NO. 2057

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SAND AND GRAVEL PRODUCTION IN THE UNITED STATES REACHED ITS HIGHEST POINT IN 1950

The increase in construction activities in this country during 1950 was reflected by a similar increase in the sand and gravel industry. Production as reported by producers to the Bureau of Mines, Department of the Interior, amounted to 370,455,000 short tons, valued at $295,040,000. This was a record production, and represented an increase of 16 precent in tonnage over that of the previous year. The average value increased 3 precent and the dollar value of the industry approached the 300-million mark. Approximately 70 percent of the total production was supplied by commercial plants, and 30 percent by Federal, State, county, and municipal governments.

In 1950, as in recent years, California was the largest producer, followed by Michigan, New York, Wisconsin, Illinois, Texas, Ohio, Minnesota, and Pennsylvania in the order named. These nine States, each with an output exceeding 13,000,000 tons, accounted for 51 percent of the total production.

COMMERCIAL PRODUCTION

Sales of sand and gravel credited to commercial producers amounted to 257,556,031 short tons in 1950, an increase of 11 percent above the 231,205,478 tons produced in 1949.

As indicated in the accompanying tables, sales in 1950 of industrial sands by commercial operators showed an increase over the previous year in all instances. Production of gravel increased in all classifications except railroad ballast, the total having an increase of 8 percent over 1949.

Glass sand. -Sales of glass sand totaled 5,149,656 short tons with an average value of $2.49 a ton - an increase of 19 percent in tonnage over 1949.

Molding sand.- The output of molding sand was 8,139,804 short tons, up 33 percent from the preceding year. The average value was $1.68 a ton, a slight increase over 1949. Michigan, New Jersey, Illinois and Ohio were the leading producers.

Prepared by H. P. Chandler and G. E. Tucker, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

Paving sand. - Production of paving sand in 1950 was 36,562,509 short tons, an increase in tonnage of 16 percent over 1950. The average value a ton, however, decreased 2 percent. New York, California, Michigan, and Pennsylvania were the leading producers.

Grinding and polishing (including sand blast) sand. - Sales of this material were 1,299,760 short tons, an increase of 20 percent over the previous year. The value per ton showed a 7 percent increase. States leading in production were Pennsylvania, Michigan, Missouri and Illinois.

Engine sand. - The output of engine sand in 1950 was 1,999,176 short tons, which was an increase of 6 percent over the 1949 figure. The value per ton also increased 3 percent.

Railroad ballast. - Sand used as railroad ballast in 1950 showed a decline of 6 percent from the previous year. Its value per ton, however, showed a 9 percent advance. Gravel used for railroad ballast also declined 10 percent, but had a 4 percent increase in unit value.

Building gravel. - Building gravel sales in 1950 were 57,093,484 short tons, being a 15 percent increase over 1949. Its average value advanced 2 percent. California, Texas, Illinois and Pennsylvania were the principal producers.

Paving gravel. - The sales of paving gravel increased 4 percent over the previous year in 1950, the total being 62,755,788 short tons, and the average value increased 2 percent. The leading states producing this material were Michigan, California, Ohio and New York.

Preparation. - Washed, screened or otherwise prepared sand and gravel comprised 90 percent (232,761,019 short tons) of the total commercial production. On the other hand, only 37 percent of these materials produced by Government-and-contractor operations were so processed. In commercial operations the average ton value of prepared sand and gravel was 98 cents a ton compared with 51 cents for unprepared. In Government-and-contractor operations the comparative values were 87 cents and 24 cents.

Transportation. - Of the total commercial production, 59 percent was reported in 1950 to have been moved by truck, 28 percent by rail, 9 percent by waterway, and in 4 percent the method was unspecified.

GOVERNMENT-AND-CONTRACTOR OPERATIONS

The production of sand and gravel from noncommercial or Government-and-contractor operations in 1950 accounted for 30 percent of the total tonnage compared with 28 percent in 1949. The value of the output represented 18 percent of the total dollar value of the industry. Production of all types of materials reported by the Government-and-contractor operations showed an increase over 1949. States reported 55 percent of the total, counties 33, municipalities 2, and Federal agencies 10.

Sand and gravel sold or used by producers in the United States, 1949-50, by commercial and Government-and contractor operations and by uses

	1949			1950		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Averge
COMMERCIAL OPERATIONS						
Sand:						
Glass	4,339,033	$10,772,151	$2.48	5,149,656	$12,815,511	$2.49
Molding	6,113,520	10,140,458	1.66	8,139,804	13,667,697	1.68
Building	59,307,353	47,879,130	.81	67,804,295	55,862,325	.82
Paving	31,520,407	25,849,473	.82	36,562,509	29,406,951	.80
Grinding and polishing 1/	1,080,886	2,063,866	1.91	1,299,760	2,670,791	2.05
Fire or furnace	318,373	429,512	1.35	372,890	522,875	1.40
Engine	1,883,580	1,830,549	.97	1,999,176	2,001,707	1.00
Filter	189,243	376,596	1.99	277,134	533,312	1.92
Railroad ballast 2/	955,996	407,234	.43	901,580	424,457	.47
Other 3/	2,300,240	1,961,224	.85	2,475,129	2,444,528	.99
Total commercial sand	108,008,631	101,710,193	.94	124,981,933	120,350,154	.96
Gravel:						
Building	49,788,200	49,319,528	.99	57,093,484	57,587,369	1.01
Paving	60,571,091	52,972,235	.87	62,755,788	55,834,416	.89
Railroad ballast 4/	10,444,070	5,618,124	.54	9,451,187	5,249,241	.56
Other 5/	2,393,486	1,716,039	.72	3,274,239	2,303,464	.70
Total commercial gravel	123,196,847	109,625,926	.89	132,574,698	120,974,490	.91
Total commercial sand and gravel	231,205,478	211,336,119	.91	257,556,631	241,324,644	.94
GOVERNMENT-AND-CONTRACTOR OPERATIONS 6/						
Sand:						
Building	1,604,000	959,000	.60	2,759,000	1,675,000	.61
Paving	7,424,000	2,820,000	.38	11,159,000	4,286,000	.38
Total Government-and-contractor sand	9,028,000	3,779,000	.42	13,918,000	5,961,000	.43
Gravel:						
Building	3,133,000	2,235,000	.71	5,216,000	4,510,000	.86
Paving	75,738,000	31,093,000	.41	93,765,000	43,245,000	.46
Total Government-and-contractor gravel	78,871,000	33,328,000	.42	98,981,000	47,755,000	.48
Total Government-and contractor sand and gravel	87,899,000	37,107,000	.42	112,899,000	53,716,000	.48
COMMERCIAL AND GOVERNMENT-AND-CONTRACTOR OPERATIONS						
Sand	117,036,000	105,489,000	.90	138,900,000	126,311,000	.91
Gravel	202,068,000	142,954,000	.71	231,555,000	168,729,000	.73
Grand total	319,104,000	248,443,000	.78	370,455,000	295,040,000	.80

See footnotes on following page.

1/ Includes blast sand as follows--1949: 393,427 tons valued at $1,222,513; 1950: 470,717 tons, $1,463,623.

2/ Includes ballast sand produced by railroads for their own use as follows--1949: 169,219 tons valued at $13,748; 1950: 188,470 tons, $35,790.

3/ Includes some sand used by railroads for fills and similar purposes as follows--1949: 406,344 tons valued at $101,177; 1950: 198,616 tons, $59,992.

4/ Includes ballast gravel produced by railroads for their own use as follows--1949: 4,406,251 tons valued at $1,748,602; 1950: 3,959,670 tons, $1,361,734.

5/ Includes some gravel used by railroads for fills and similar purposes as follows--1949: 759,841 tons valued at $240,217; 1950: 828,723 tons, $184,105.

6/ Approximate figures for States, counties, municipalities, and other Government agencies directly or under lease.

Industrial sand sold or used by producers in the United States, 1946-50, by uses

Year	Glass sand		Molding sand		Grinding and polishing sand 1/	
	Short tons	Value	Short tons	Value	Short tons	Value
1946-	4,848,602	$ 9,541,405	6,973,906	$ 9,531,263	906,889	$ 1,379,954
1947-	5,321,247	11,395,245	8,308,434	11,944,228	1,099,253	1,801,989
1948-	4,542,260	10,770,845	8,265,451	12,892,392	1,119,802	2,151,095
1949-	4,339,033	10,772,151	6,113,520	10,140,458	1,080,886	2,063,866
1950-	5,149,656	12,815,511	8,139,804	13,667,697	1,299,760	2,670,791

Year	Fire or furnace sand		Engine sand		Filter sand		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1946-	248,866	$333,643	2,797,132	$1,924,779	157,511	$284,991	15,932,906	$22,996,035
1947-	373,917	426,956	2,683,333	2,092,656	211,646	366,905	17,997,830	28,027,979
1948-	322,576	492,128	2,445,454	2,439,135	158,269	382,600	16,853,812	29,128,195
1949-	318,373	429,512	1,883,580	1,830,549	189,243	376,596	13,924,635	25,613,132
1950-	372,890	522,875	1,999,176	2,001,707	277,134	533,312	17,238,420	32,211,893

1/ Includes blast sand as follows--1946: 292,899 tons valued at $736,819; 1947: 308,128 tons, $958,023; 1948: 381,455 tons, $1,189,530; 1949: 393,427 tons, $1,222,513; 1950: 470,717 tons, $1,463,623.

Sand and gravel sold or used by commercial and Government-and-contractor producers in the United States in 1950, by States

State	Short tons	Value	State	Short tons	Value
Alabama	3,616,363	$2,463,722	New Hampshire	1/1,713,284	1/$226,424
Alaska	3,050,020	2,377,407	New Jersey	1/7,620,422	1/8,636,141
Arizona	2,498,777	1,590,001	New Mexico	937,653	923,270
Arkansas	4,118,080	3,446,578	New York	21,778,089	18,075,237
California	41,894,039	35,547,558	North Carolina	8,352,475	5,465,067
Colorado	5,154,287	3,940,439	North Dakota	4,270,838	1,660,371
Connecticut	2,998,424	1,861,741	Ohio	15,664,175	16,209,267
Delaware	367,524	291,715	Oklahoma	3,286,834	2,356,853
Florida	2,793,865	2,806,431	Oregon	8,199,900	8,168,293
Georgia	1/ 1,211,782	1/ 936,726	Pennsylvania	13,858,154	17,172,215
Idaho	4,281,908	3,043,905	Puerto Rico	101,013	103,806
Illinois	18,695,433	16,531,797	Rhode Island	579,528	580,322
Indiana	9,723,033	7,516,509	South Carolina	348,060	166,710
Iowa	8,994,822	4,795,835	South Dakota	5,392,247	2,750,847
Kansas	9,781,123	6,782,285	Tennessee	4,152,684	4,411,105
Kentucky	2,392,672	2,262,964	Texas	17,972,105	15,707,724
Louisiana	5,505,362	6,310,425	Utah	3,435,277	2,251,515
Maine	4,897,143	1,726,217	Vermont	1,040,977	661,994
Maryland	1/ 5,864,472	1/ 7,789,764	Virginia	4,373,984	4,144,846
Massachusetts	7,111,067	5,430,790	Washington	10,605,791	7,435,340
Michigan	24,556,911	16,699,203	West Virginia	3,613,046	6,241,057
Minnesota	15,472,815	5,903,025	Wisconsin	19,117,115	11,959,012
Mississippi	2,764,444	1,985,908	Wyoming	1,937,943	1,251,220
Missouri	6,232,411	5,267,939	Undistributed1/	1,398,000	612,000
Montana	9,044,125	5,140,207			
Nebraska	5,077,792	3,167,659	Total	370,455,000	295,040,000
Nevada	2,617,052	2,253,258			

1/ Output of commercial producers in New Hampshire and of Government-and-contractor operations in Georgia, Maryland, and New Jersey comprises "Undistributed."

Comparison of number and production of commercial sand and gravel plants in the United States, 1949-50, by size groups 1/

Size groups, in short tons	1949				1950			
	Plants 2/		Production		Plants 2/		Production	
	Number	Percent of total	Short tons	Percent of total	Number	Percent of total	Short tons	Percent of total
Less than 25,000	953	38.8	9,320,000	4.1	890	35.6	8,952,000	3.6
25,000 to less than 50,000	425	17.3	15,344,000	6.8	478	19.1	17,242,000	6.8
50,000 to less than 100,000	449	18.3	32,019,000	14.2	439	17.6	31,058,000	12.3
100,000 to less than 200,000	337	13.7	47,223,000	21.0	367	14.7	51,733,000	20.5
200,000 to less than 300,000	146	5.9	35,576,000	15.8	147	5.9	35,676,000	14.1
300,000 to less than 400,000	53	2.2	18,147,000	8.0	73	2.9	24,999,000	9.9
400,000 to less than 500,000	38	1.5	16,983,000	7.5	31	1.2	13,933,000	5.5
500,000 to less than 600,000	16	.7	8,703,000	3.9	22	.9	12,147,000	4.8
600,000 to less than 700,000	6	.2	3,848,000	1.7	14	.6	8,745,000	3.5
700,000 to less than 800,000	11	.4	8,310,000	3.7	6	.2	4,388,000	1.7
800,000 to less than 900,000	7	.3	5,906,000	2.6	4	.1	3,386,000	1.4
900,000 to less than 1,000,000	3	.1	2,881,000	1.3	7	.3	6,775,000	2.7
1,000,000 and over	14	.6	21,204,000	9.4	22	.9	33,347,000	13.2
Total	2,458	100.0	225,464,000	100.0	2,500	100.0	252,381,000	100.0

1/ Excludes operations by or for States, counties, municipalities, and Federal Government agencies as follows—1949: 807 with an output of 87,899,000 tons of sand and gravel; 1950; 835 operations, 112,899,000 tons. Excludes operations by or for railroads as follows—1949: 128 with an output of 5,741,000 tons of sand and gravel; 1950: 142 operations, 5,175,000 tons.

2/ Includes a few companies operating more than 1 plant but not submitting separate returns for individual plants.

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MINERAL MARKET REPORT
M. M. S. NO. 2058

ZINC INDUSTRY IN 1951 - PRELIMINARY

Domestic production of slab zinc totaled 932,000 short tons in 1951, 2 percent above the 1950 output and the greatest quantity in the peacetime history of the United States, according to the Bureau of Mines, United States Department of the Interior. This output was exceeded only during the World War II years 1942 and 1943. Domestic mine production of 679,000 tons of recoverable zinc was the largest since 1944. Montana became the leading mine producer among the States, followed, in order, by Idaho, New Jersey, Colorado, Arizona, Oklahoma, and New Mexico. Imports of zinc in ore and concentrate increased 11 percent but imports of slab zinc declined 44 percent. Consumption of zinc was brought into banance with the available supply by restrictive orders issued by the National Production Authority. Stocks at primary and secondary smelters totaled about 22,000 tons on December 31, an increase of 13,000 tons over beginning stocks but continued to be seriously low. Consumers' inventories on December 31 were 17 percent below January 1 levels. Zinc prices were quoted generally at 17.50 cents per pound, East St. Louis, until October 2, when the Office of Price Stabilization permitted a 2-cent rise.

Production. - Mine production of recoverable zinc (including that recovered as zinc pigments and salts directly from ore) increased to 679,000 tons in 1951, 9 percent above the 1950 total. This high output was achieved despite a 2-weeks' shutdown of mines, mills, and smelters caused by a labor strike in the Western States in late August and early September. The increased yield was attributed to the great demand for zinc generated by the expanding defense program. Regionally, on a percentage basis, the largest gains were recorded in the West Central States of Oklahoma, Kansas, Missouri, and Arkansas where the output was 13 percent above 1950, but again less than half of the World War II yearly average. Zinc output in the Western States and the States East of the Mississippi River increased 9 percent and 8 percent, respectively, during the year.

Total domestic production of slab zinc, including primary metal from domestic and foreign ores and redistilled secondary metal from scrap (based upon producers' monthly reports), was approximately 932,000 tons. This quantity represented an increase of 22,000 tons over 1950 and except for 1942 and 1943 established a new peak. Data on which to base estimates as to the production of slab zinc obtained from foreign and from domestic ores are not available at this time. Production of redistilled secondary slab zinc (46,000 tons), constituting about 5 percent of the total, was 31 percent lower than the 1950 output.

Prepared March 19, 1952, by O. M. Bishop and Esther B. Miller, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Each year a substantial tonnage of zinc ore (both domestic and foreign) is consumed directly in the manufacture of salts and pigments. Estimates for 1951 indicate that the zinc content of pigments and salts produced in the United States from zinc ore totaled approximately 124,000 tons. This compares with 134,434 tons in 1950.

Labor strikes caused some production losses in 1951 but did not impair output as seriously as in some years. The strike of mine, mill, and smelter workers in the Western States from August 23 to September 6 curtailed output in that area somewhat. Zinc mine production from Virginia was reduced an estimated 8,000 tons because of a strike at the Austinville mine of the New Jersey Zinc Co., Bertha Mineral Division, from April 1 to September 22. The Hanover mine and mill of the New Jersey Zinc Co., Empire Zinc Division, closed by a strike October 17, 1950, was idle throughout 1951.

Zinc-reduction plants. - During 1951, 18 primary zinc-reduction plants were in operation. Of these, 9 operated with horizontal retorts exclusively, 4 with vertical retorts exclusively (1 electrothermic) and 5 with electrolytic methods.

Consumption. - Slab zinc apparently made available for shipment to domestic consumers during 1951 totaled 929,000 tons compared with 1,011,000 tons in 1950. Actual consumption of slab zinc at approximately 600 plants during 1951 indicated consumption of about 887,000 tons (including 3,427 tons of remelt zinc), 8 percent less than the previous year's total.

Consumption of zinc for galvanizing declined to 386,000 tons in 1951, 13 percent less than the previous year's total. The use of zinc in zinc-base alloys, largely die castings, and in rolled zinc products also was lower than in the preceding year - 266,000 tons and 64,000 tons, respectively, compared with 289,527 tons and 68,444 tons, respectively, in 1950. Brass making was the only major usage of zinc in which an increase was noted; consumption of zinc in brass products increased to 141,000 tons, slightly more than 1 percent above the 1950 total.

Stocks. - Inventories of slab zinc at producers' plants were 22,000 tons on December 31, 1951 compared with 8,884 tons at the beginning of the year. Stocks at primary plants totaled 21,000 tons and at secondary plants less than 1,000 tons. While these stocks were more than twice the dangerously low stocks at the end of 1950 they continued to be inadequate, as they were sufficient to meet consumers' needs for only 9 days at the average daily rate of consumption in 1951.

Consumers' stocks of slab zinc on December 31 totaled 50,000 tons, a decrease of 17 percent over the quantity held on January 1.

Prices. - Ceiling prices were established for zinc on January 26, 1951 at the highest price (for each seller) at which sales were made between December 19, 1950 and January 25, 1951. Thus a number of ceiling prices were maintained. The bulk of zinc sales, however, were at 17.50 cents per pound, Prime Western grade slab zinc, East St. Louis. This price remained in effect until October 2, 1951 when the Office of Price Stabilization permitted a rise of 2 cents per pound.

The official London price of £151 per long ton of zinc (equivalent to 18.86 cents per pound computed on the 279.75 cent base) established by the British Ministry of Supply on October 4, 1950 was in effect until April 1, 1951 when the Ministry increased the price to £160 (19.98 cents). The price was raised by £30 on July 14 to £190 (23.73 cents) at which level it remained for the remainder of the year.

Foreign trade. - Imports of zinc in ore and concentrates increased to 302,500 tons in 1951, 11 percent above 1950 and the highest since 1945. Of the total zinc in ore imported, 47 percent came from Mexico, 32 percent from Canada, 10 percent from Peru, 3 percent from Bolivia, 2 percent each from Guatemala and Argentina, and 1 percent each from Spain, Australia, and the Union of South Africa.

Imports of slab zinc declined to 88,000 tons, or to 44 percent below the 1950 level. Canada supplied approximately 97 percent of the total; minor quantities were received from Norway, Mexico, Belgium, French Morocco, Netherlands, and Peru.

Exports of slab zinc totaled 36,500 tons in 1951 compared with 12,917 tons in 1950. The United Kingdom received 55 percent of the total, India 13 percent, Brazil 11 percent, Canada 5 percent, and Yugoslavia 3 percent. In addition, 3,000 tons of zinc contained in ore were exported to Canada.

Tariff. - The import duties of 3/4 cent per pound on zinc-bearing ores (zinc content) and 7/8 cent a pound on zinc in blocks, pigs, or slabs and dust were reduced on June 6 to 6/10 cent a pound and 7/10 cent a pound, respectively. The tariff of 1-1/8 cent a pound on sheet zinc (plated) and 1 cent a pound on other sheet zinc remained unchanged throughout the year. Duties on zinc scrap, dross, and skimmings were suspended during 1951.

Table 1. - Primary and redistilled secondary slab zinc produced in the United States, 1950-51, in short tons

Year	Primary			Redistilled secondary	Total (excludes remelted)
	Domestic	Foreign	Total		
1950..	588,291	1/ 255,176	843,467	66,970	910,437
1951 2/	3/	3/	885,800	46,000	931,800

1/ Includes a small quantity of foreign slab zinc further refined into high grade metal in the United States. 2/ Preliminary figures. 3/ Data not available.

Table 2. - Distilled and electrolytic zinc, primary and secondary, produced in the United States, 1950-51, in short tons

Year	Electrolytic primary	Distilled primary	Redistilled secondary		Total
			At primary smelters	At secondary smelters	
1950......	342,085	501,382	28,411	38,559	910,437
1951 1/.	336,100	549,700	14,000	32,000	931,800

Classified according to grade

Year	Special High Grade	Regular High Grade	Intermediate	Brass Special	Selected	Prime Western	Total
1950.....	271,678	192,075	21,571	46,730	4,021	374,362	910,437
1951 1/.	279,100	176,300	19,100	2/ 457,300			931,800

1/ Preliminary figures. 2/ Separate figures not available.

Table 3. - Stocks of zinc on hand at primary and secondary zinc-reduction plants in the United States at the end of 1950 and 1951, in short tons

	At primary plants	At secondary plants	Total
December 31, 1950.....	7,920	964	8,884
December 31, 1951.....	21,264	637	21,901

Table 4. - Consumers' stocks of slab zinc at plants at the beginning of 1951 and December 31, 1951, by industries, in short tons

Industries	Galvanizing	Brass mills	Die casters	Zinc rolling mills	Oxide plants	Others	Total
January 1............	34,191	8,549	13,051	3,190	390	978	1/60,349
December 31.........	20,047	14,326	10,503	3,575	1,418		1/49,869

1/ Stocks on January 1 and December 31 exclude 512 tons and 488 tons, respectively, of remelt spelter.

Table 5. - Imports and exports of zinc in 1950 and 1951 in short tons 1/

	Imports		Exports
	Zinc in ore and concentrate	Slab zinc	Slab zinc
1950..................	272,538	155,974	12,917
1951..................	302,500	87,900	36,500

1/ From records of the Bureau of Census, U. S. Department of Commerce.

Table 6. - Slab zinc available for shipment to consumers in 1950-51, in short tons

	1950	1951
Supply:		
Stocks at primary smelters Jan. 1	90,710	7,920
Stocks at secondary plants Jan. 1	3,511	964
Production - primary	843,467	885,800
secondary	66,970	46,000
Imports of slab zinc	155,974	87,900
Total available	1,160,632	1,028,584
Withdrawn:		
Exports of slab zinc	12,917	36,500
Shipments to Government account	128,256	40,829
Stocks at primary smelters Dec. 31	7,920	21,264
Stocks at secondary plants Dec. 31	964	637
Total withdrawn	150,057	99,230
Available to consumers	1,010,575	929,354

Table 7. - Consumption of slab zinc in the United States in 1950 and 1951, by industries, in short tons

	Galvanizing	Brass products	Zn-base alloy	Rolled zinc	Zinc oxide	Other	Total
1950	441,686	139,373	289,527	68,444	18,187	9,917	1/967,134
1951:							
January	32,902	11,735	21,405	6,112	2,406		74,560
February	28,213	10,097	19,651	5,088	2,076		65,125
March	32,984	11,718	23,174	5,668	2,569		76,113
April	31,934	11,703	22,541	5,238	1,948		73,364
May	33,901	11,870	23,559	5,753	2,439		77,522
June	33,525	11,359	24,874	5,148	2,483		77,389
July	31,199	8,848	23,885	4,418	2,599		70,949
August	36,557	13,078	24,460	6,023	2,521		82,639
September	31,757	10,359	19,204	4,611	2,354		68,285
October	32,302	14,490	21,489	5,823	2,058		76,162
November	31,064	12,873	21,108	5,725	2,643		73,413
December	30,035	13,326	21,092	4,393	2,642		71,488
Total	386,373	141,456	266,442	64,000	28,738		2/887,009

1/ Includes 3,035 tons of remelt zinc.
2/ Includes 3,427 tons of remelt zinc.

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MINERAL MARKET REPORT
M. M. S. NO. 2059

LEAD INDUSTRY IN 1951 - PRELIMINARY

The domestic lead industry was featured by a marked decline in available supply in 1951, according to the Bureau of Mines, United States Department of the Interior. The supply totaled 1,137,000 tons in 1951 compared with 1,435,000 tons in 1950, a 21 percent decrease. Supply was composed of mine production of recoverable lead (390,000 tons), secondary lead recovered (498,000 tons) and imports (249,000 tons). Imports were less than half of the 1950 total, accounting for most of the decrease. Consumption of primary, antimonial, and secondary lead was the second highest on record, lower only than in 1950, and was limited somewhat by available supplies. The expanding national defense program engendered a strong demand for lead during most of the year; it was not until the last four months that consumption of lead was brought into balance with available supplies.

Lead was brought under inventory control on February 16 through the National Production Authority Order M-38. This order was amended on May 28 to set forth certain limitations on the acceptance of rated orders so as to provide for the equitable distribution of such orders, to provide for the creation of a set-aside reserve of pig lead to meet emergency situations, and to establish limitations on the use of lead and lead products. The amended order restricted the use of lead forms and materials beginning June 1, to not more than 100 percent of the average monthly use by weight during the first 6 months of 1950, and prohibited its use for any new purposes. Order M-76, issued on July 26, placed the supply of soft pig lead produced by primary refiners under allocation control. Effective November 1 imported pig lead was also placed under allocation control by Order M-76 as amended. Lead prices were generally quoted at 17.00 cents per pound, New York, until October 2, when the Office of Price Stabilization permitted a 2-cent rise.

Production. - Domestic mine production of recoverable lead declined to 390,428 tons in 1951, 9 percent below the 1950 total and the lowest annual output since 1947. The decrease was accounted for partly by the shutdown of most of the lead mines, mills, and smelters in the Western States by a strike from August 23 to September 6, and partly by depletion of orebodies. Missouri was by far the largest lead-producing State, accounting for 32 percent of the total United States output. Idaho and Utah were second and third in production, with 19 percent and 13 percent, respectively, of the total. Production in 8 of the 15 principal States or regions was lower than that in 1950. The largest decreases, on a tonnage basis, were in Idaho, Arizona, Missouri, Oklahoma, Washington, Nevada, and California. States in which lead production increased substantially included Utah, Colorado, Montana, and New Mexico.

Preliminary data based upon reports from producers indicate that 421,481 tons of refined lead and 56,813 tons of antimonial lead were produced from domestic and foreign ores and base bullion and from scrap at primary refineries in 1951. These

Prepared March 19, 1952, by O. M. Bishop and Edith E. den Hartog, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

outputs compare with production of 513,769 tons of refined lead and 53,455 tons of antimonial lead in 1950. Although some scrap lead is treated at primary smelters and refineries, the greater part is received at a large number of plants that treat scrap exclusively. Recovery of lead from scrap at primary and other plants increased to an estimated 498,000 tons in 1951, 3 percent more than in 1950.

Consumption. - Total over-all domestic lead consumption in 1951, based upon monthly reports from about 750 consumers of refined lead, antimonial lead, and lead in scrap and alloys, is estimated at 1,182,000 tons. This was second only to the record consumption of 1,238,000 tons in 1950. Approximately 32 percent of the total was consumed in the manufacture of storage batteries, 12 percent for pigments, 11 percent for cable covering, and 11 percent for tetraethyl fluid.

Stocks. - Producers' stocks of refined primary lead dropped from 28,894 tons on December 31, 1950 to 18,518 tons, an extremely low level, at the end of 1951. Antimonial lead stocks totaled 5,728 tons on December 31 compared with 6,725 tons in 1950. Consumers' lead stocks of all classes also declined sharply during the year -- from 137,147 tons on December 31, 1950 to 89,277 tons on November 30, 1951.

Price. - Ceiling prices were established for lead on January 26, 1951 at the highest price (for each seller) at which sales were made between Decemver 19, 1950 and January 25, 1951. Thus a number of ceiling prices were maintained. The bulk of lead sales, however, were at 17.00 cents per pound, common lead, New York. This price remained in effect until October 2 when the Office of Price Stabilization permitted a rise of 2 cents per pound.

The official London price of £136 per long ton of lead (equivalent to 15.99 cents per pound computed on the 279.75 cent base fixed by the Ministry of Supply on November 1, 1950) remained in effect until April 1, 1951 when the Ministry raised the price to £160 (19.98 cents). The price was raised again on July 14 to £180 (22.48 cents). On October 1 the official price was reduced to £175 (21.86 cents) at which level it remained for the balance of the year.

Foreign trade. - Total imports of lead declined to 248,786 tons in 1951, 52 percent less than the all-time high of 521,779 tons in 1950. Imports fell so drastically because foreign producers were reluctant to export lead to the United States owing to the fact that the free world market price for lead was considerably higher than the United States ceiling price. By the end of the year, however, the United States "calculated risk" policy of maintaining a ceiling price well below the free market price had succeeded to the extent that world prices for lead were essentially the same as the United States price. This reduction occurred principally because foreign producers could not sell outside the United States all the lead they produced.

Of total imports 178,908 tons or 72 percent were as pigs and bars, 67,597 tons or 27 percent in ore and matte, and 2,281 tons or 1 percent in base bullion. Canada supplied 32 percent of the pigs and bars, Mexico 21 percent, Yugoslavia 20 percent, Peru 18 percent, and Australia 8 percent. Imports of lead in ore and matte were obtained from Peru (25 percent), Bolivia (24 percent), Union of South Africa (16 percent), Canada (11 percent), Australia (11 percent), and several other countries. Base bullion imports were obtained almost entirely from Australia.

Exports of pig lead (excluding re-exports of foreign refined lead) totaled 1,282 tons compared with 2,735 tons in 1950.

Tariff. - There were no changes in lead tariffs in 1951. The import duties of 1 1/16 cents a pound on pig lead and 3/4 cent a pound on lead in ores and concentrates were in effect throughout the year.

Table 1. - Supply of lead for the United States, 1950 and 1951, in short tons

	1950	1951 1/
Mine production of recoverable lead..........	430,827	390,428
Secondary lead recovery......................	482,275	498,000
Imports (General):		
Lead in pigs, bars, and old..................	441,798	178,908
Lead in base bullion.........................	3,488	2,281
Lead in ores and matte.......................	76,493	67,597
Total supply.................................	1,434,881	1,137,214

1/ Preliminary.

Table 2. - Refined lead produced at primary refineries in the United States, 1950-1951, in short tons

Year	From domestic ores and base bullion	From foreign ores and base bullion	From scrap	Total
1950....................	418,809	89,505	5,455	513,769
1951 (preliminary).......	1/ 350,000	2/	2/	421,481

1/ Estimate.

2/ Data not yet available.

Table 3. - Antimonial lead produced at primary lead refineries in the United States, in 1950 and 1951, in short tons

		Antimony content		Lead content (by difference)			
	Production	Weight	Percent	From domestic ore	From foreign ore	From scrap	Total
1950	57,959	4,504	7.8	10,728	4,344	38,383	53,455
1951 1/	60,850	4,037	6.6	2/	2/	2/	56,813

1/ Preliminary.

2/ Data not yet available.

Table 4. - Consumption of lead in the United States, 1950 and 1951 (preliminary), in short tons

	1950	1951 Preliminary total
Metal Products:		
Ammunition	38,438	40,185
Bearing metals	38,241	35,127
Brass and bronze	21,461	29,371
Cable covering	131,989	131,858
Calking lead	53,450	46,144
Casting metals	19,295	22,007
Collapsible tubes	13,386	13,204
Foil	3,941	2,881
Pipes, traps and bends	41,361	32,633
Sheet lead	30,778	31,179
Solder	94,606	81,196
Storage batteries (antimonial lead)	212,464	198,256
Storage batteries (oxides)	185,945	175,336
Terne metal	3,805	2,051
Type metal	24,776	27,656
Total metal products	913,936	869,084
Pigments:		
White lead	36,181	25,578
Red lead and litharge	101,974	87,908
Pigment colors	13,464	12,796
Other 1/	14,768	14,799
Total pigments	166,387	141,081
Chemicals:		
Tetraethyl lead	113,846	128,407
Miscellaneous chemicals	11,680	6,896
Total chemicals	125,526	135,303
Miscellaneous Uses:		
Annealing	6,456	6,561
Galvanizing	2,426	2,097
Lead plating	1,521	1,183
Weights and ballast	6,870	7,332
Total miscellaneous uses	17,273	17,173
Other Uses Unclassified	14,859	15,266
Total consumed	1,237,981	1,177,907

1/ Includes lead content of leaded zinc oxide production.

Table 5. - Secondary lead recovered in the United States, 1950-1951, in short tons

	1950	1951 (preliminary)
At primary plants:		
In refined lead......................	5,455	1/
In antimonial lead..................	38,383	1/
At secondary plants....................	438,437	1/
Total........................	482,275	2/ 498,000

1/ Data not yet available.
2/ Estimate.

Table 6. - Stocks of lead on hand at primary lead refineries in the United States at the end of 1950 and 1951, in short tons

Date	Refined lead	Antimonial lead 1/
December 31, 1950...............	28,894	6,725
December 31, 1951...............	18,518	5,728

1/ Lead content.

Table 7. - Consumers' stocks of lead at plants at the end of 1950 and November 1951, in short tons, lead content

Date	Refined soft lead	Antimonial lead	Unmelted white scrap	Percentage metals	Copper-base scrap	Drosses residues, etc.	Total
Dec. 31, 1950	86,101	26,252	5,720	6,308	1,676	11,090	137,147
Nov. 30, 1951	49,079	21,478	3,810	7,806	1,211	5,893	89,277

Table 8. - Imports and exports of lead in 1950 and 1951, in short tons

Year	Imports			Exports
	Lead in ore and matte	Lead in base bullion	Pigs and bars	Pigs and bars
1950..........	76,493	3,488	441,798	2,735
1951..........	67,597	2,281	178,908	1,282

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MINERAL MARKET REPORT
MMS NO. 2060

BYPRODUCT SULFURIC ACID IN 1951
(final annual figures)

Production of byproduct sulfuric acid at copper and zinc plants in 1951, (basis, 100 percent) increased 11 percent over 1950, according to the Bureau of Mines, United States Department of the Interior. The acid reported is only that produced from the sulfur content of the sulfide ores.

Byproduct sulfuric acid 1/ (basis, 100 percent) produced at copper, zinc, and lead plants in the United States, 1947-51, in short tons.

	Copper plants 2/	Zinc plants	Total
1947----------------	126,494	598,703	725,197
1948----------------	111,967	529,478	641,445
1949----------------	96,344	476,932	573,276
1950----------------	131,342	609,571	740,913
1951----------------	189,125	635,948	825,073

1/ Includes acid from foreign materials.
2/ Includes acid produced at a lead smelter. Excludes acid made from pyrites concentrates in Montana and Tennessee.

In addition to the byproduct sulfuric acid shown in the table, some of the zinc plants covered produced the following quantities of sulfuric acid from native sulfur: 1947, 266,104 tons; 1948, 233,099; 1949, 130,592; 1950, 243,743; and 1951, 261,106 tons. Sulfur consumed to make the foregoing quantities was: 1947, 93,460 tons; 1948, 80,365; 1949, 44,525; 1950, 84,249; and 1951, 88,091. No sulfur was used at copper plants that produce byproduct acid.

Prepared by Helena M. Meyer under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Interior - Duplicating Section, Washington, D. C.
Prepared 3/19/52.

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OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

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FOR RELEASE MAY 1952

MINERAL MARKET REPORT,
M.M.S. NO. 2063

DIRECTORY OF PACKAGED-FUEL OPERATIONS IN THE UNITED STATES THAT REPORTED PRODUCTION IN 1951 1/

(Directory of fuel-briquet operations issued separately)

State	Name and address of operator	Location of plant	Raw fuel used, (as reported by operator)
EASTERN STATES:			
Virginia	C. M. PARRISH COAL CO., INC. Allen Ave. and Marshall St. Richmond 20, Va.	Richmond	Bituminous low-volatile
	WRIGHT COAL & OIL CO., INC. 1019 West 41st Street Norfolk, Va.	Norfolk	Bituminous low-volatile
CENTRAL STATES:			
Illinois	CRUMB-COLTON BLOCK PLANT 1901 Kishwaukee Street Rockford, Ill.	Rockford	Petroleum coke
	HARRINGTON-McKINSTRA Benton and Washington Sts. Freeport, Ill.	Freeport	Bituminous low-volatile
Indiana	HARDMAN FUEL & BRICK CO. 1619 Lincoln Way West South Bend, Ind.	South Bend	Bituminous low-volatile
	SUPERIOR COAL COMPANY 919 Wells Street Fort Wayne 7, Ind.	Fort Wayne	Bituminous low-volatile
	WALTON COAL COMPANY 1506 South Anthony Blvd. Fort Wayne, Ind.	Fort Wayne	Bituminous low-volatile

DIRECTORY OF PACKAGED-FUEL OPERATIONS IN THE UNITED STATES THAT REPORTED PRODUCTION IN 1951-(continued) 1/

State	Name and address of operator	Location of plant	Raw fuel used, (as reported by operator)
CENTRAL STATES: (Continued)			
Iowa	EDWARDS & BROWNE COAL CO. 1604 East 4th Street Sioux City, Iowa	Sioux City	Semianthracite
Michigan	WILL ARENS 1040 Ohio Street Hancock, Mich.	Hancock	Bituminous low-volatile
	BLAESS COAL COMPANY 124 West Summit Street Ann Arbor, Mich.	Ann Arbor	Bituminous low-volatile
	BRICKER BROTHERS 24581 Sherwood Avenue Center Line, Mich.	Center Line	Bituminous low-volatile
	BULTEMA BROTHERS FUEL CO. 1430 Godfrey Avenue,SW Grand Rapids 9, Mich.	Grand Rapids	Bituminous low-volatile
	ROBERT ERNST & SONS CO. 8960 Hubbell Avenue Detroit 28, Mich.	Detroit	Bituminous low-volatile
	FAMOUS PACKAGE COAL 6056 North Telegraph Road Dearborn, Mich.	Dearborn	(Not reported)
	THE HURD-STERLING CO. 15 West First Street Monroe, Mich.	Monroe	Bituminous low-volatile
	JOHNSON COAL CUBING CO.,INC. 9309 Hubbell Avenue Detroit 28, Mich.	Detroit	Bituminous low-volatile
	LEGION OIL COMPANY 1021 West Front Street Monroe, Mich.	Monroe	(Not reported)
	MILLER'S TANK CAR COMPANY 12541 Grand River Detroit, Mich.	Detroit	Bituminous low-volatile
	MURPHY'S CORNER 2748 South Wayne Road Wayne, Mich.	Wayne	Bituminous low- and high-volatile

DIRECTORY OF PACKAGED-FUEL OPERATIONS IN THE UNITED STATES THAT REPORTED PRODUCTION IN 1951-(continued) 1/

State	Name and address of operator	Location of plant	Raw fuel used, (as reported by operator)
Michigan (Continued)	NICHOLSON TERMINAL & DOCK CO P. O. Box 66 River Rouge 18, Mich.	Ecorse	Bituminous low-volatile
	UNITED ICE & FUEL COMPANY 2202 North Dort Highway Flint 7, Mich.	Flint	Bituminous low- and high volatile
Minnesota	COAL BLOX COMPANY, INC. 2501 Hiawatha Avenue Minneapolis, Minn.	Minneapolis	Bituminous low-volatile and petroleum coke
	MINNEAPOLIS COAL COMPANY 74 Lowry Avenue, North Minneapolis 11, Minn.	Minneapolis	Bituminous low-volatile and petroleum coke
	ST. PAUL PACKAGED FUEL CO., INC. 459 East 8th Street St. Paul 1, Minn.	St. Paul	Bituminous low-volatile and petroleum coke
	SIMONSON CASHWAY COMPANY St. Cloud, Minn.	St. Cloud	Bituminous low-volatile
Nebraska	DONOHO COAL COMPANY 917 South 39th Street Omaha 5, Nebr.	Omaha	Semianthracite
Ohio	ACKERMAN COAL COMPANY 1212 Elm Street Toledo, Ohio	Toledo	Bituminous low-volatile
	AIR CITY FUEL COMPANY 1287 Air City Avenue Dayton 3, Ohio	Dayton	Bituminous low-volatile
	BARTAK COAL & SUPPLY CO. 5381 Dunham Road Maple Heights, Ohio	Maple Heights	Bituminous low-volatile
	DENISON COAL & SUPPLY CO. 7008 Denison Avenue Cleveland 2, Ohio	Cleveland	(Not reported)
	THE DIAMOND SUPPLY AND COAL COMPANY 4120 East 104th Street Cleveland 5, Ohio	Cleveland	Bituminous low-volatile

DIRECTORY OF PACKAGED-FUEL OPERATIONS IN THE UNITED STATES THAT REPORTED PRODUCTION IN 1951-(continued) 1/

State	Name and address of operator	Location of plant	Raw fuel used, (as reported by operator)
Ohio (Continued)	THE ERIE COAL & COKE CO. 17230 Waterloo Road Cleveland, Ohio	Cleveland	Bituminous low-volatile
	THE MOELDER COAL COMPANY Chickering Ave. and B & O Railroad Cincinnati 32, Ohio	Cincinnati	Bituminous low-volatile
	NICKEL PLATE COAL COMPANY 1639 Wayside Avenue Cleveland 12, Ohio	Cleveland	Bituminous high-volatile
	PACIFIC COAL & SUPPLY, INC. 6317 Kinsman Road Cleveland 4, Ohio	Cleveland	Bituminous low-volatile
	THE RALPH COAL AND SUPPLY COMPANY 873 Western Avenue Toledo, Ohio	Toledo	Bituminous low-volatile
	REID-CLINTON COAL COMPANY 6332 Broadway Cleveland 4, Ohio	Cleveland	Bituminous low-volatile
	WHITEHOUSE COAL COMPANY 12400 Broadway Cleveland, Ohio	Cleveland	Bituminous low-volatile
Wisconsin	THE CLEVELAND-CLIFFS IRON COMPANY 1460 Union Commerce Bldg. Cleveland 14, Ohio	Green Bay	Bituminous low-volatile
	JOHNSON COAL COMPANY 1127 Chatham Street Racine, Wisconsin	Racine	Bituminous low-volatile
	FRANK KRIZ & COMPANY 648 - 23rd Street Oshkosh, Wisconsin	Oshkosh	Bituminous low-volatile and petroleum coke
	SAWYER FUEL & SUPPLY CO. 127 Main Street Green Bay, Wisconsin	Sturgeon Bay	(Not reported)

DIRECTORY OF PACKAGED-FUEL OPERATIONS IN THE UNITED STATES THAT REPORTED PRODUCTION IN 1951-(continued) 1/

State	Name and address of operator	Location of plant	Raw fuel used, (as reported by operator)
Wisconsin (Continued)	SHEBOYGAN COAL COMPANY 627 South 7th Street Sheboygan, Wisc.	Sheboygan	Bituminous low-volatile
	SUPERIOR PACKAGED FUEL CO. 1005 Winter Street Superior, Wisc.	Superior	Bituminous low-volatile
	VALLEY COAL COMPANY, INC. 234 West Johnson Street Fond du Lac, Wisc.	Fond du Lac	Bituminous low-volatile

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1/ In addition to the plants listed herein, there were 8 other plants operating in 1951 (1 in Kentucky, 4 in Michigan, 1 in Missouri, and 2 in Ohio).

Prepared by Golden V. Chiriaco, under the supervision of J. A. Corgan, Chief, Anthracite and Coke Sections, Coal Branch, T. W. Hunter, Chief.

Interior—Duplicating Section, Washington, D. C.
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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary   J. J. FORBES, Director

FOR IMMEDIATE RELEASE

MINERAL MARKET REPORT
MMS NO. 2061

JEWEL BEARINGS

The consumption of jewel bearings by the firms engaged in that industry in the United States that report to the Bureau of Mines, Department of the Interior, has increased steadily during the years 1945-1950 inclusive. Finished jewels consumed in 1950 showed an increase of 92 percent over the 1945 figure.

At the close of the year 1950 the reporting companies had on hand 106,930,045 finished jewels, double the amount that was in stock in 1945. At the 1950 consumption figures this inventory amounts to an eighteen months supply.

The following statistical tables show the trend of the jewel bearing industry during the period 1945-1950, and its consumption of jewels and other raw materials.

Prepared by H. P. Chandler and A. L. Marks, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division.

CONSUMPTION OF JEWEL BEARINGS IN 1945-50

ITEM	Opening Inventory (Stocks at end of Preceding Year)	PRODUCED DURING YEAR	RECEIPTS DURING YEAR		CONSUMED DURING YEAR	SHIPMENTS DURING YEAR		STOCKS END OF YEAR
	No. of Jewels	No. of Jewels	No. of Jewels	Value	No. of Jewels	No. of Jewels	Value	No. of Jewels
1945								
Blanks	8,856,073	1,058,804	1,382,223	$21,348	5,096,135	655,896	$48,180	5,545,069
Semi-Fabricated Jewels	2,834,593	XXXXXXXXX	634,159	39,902	921,061	58,313	15,818	2,489,378
Finished Jewels	58,056,241	1,232,471	35,015,945	1,682,356	36,387,848	4,830,375	613,672	53,086,434
Vee Jewels	1,042	---------	10,500	1,100	3,291	----------	-------	8,251
Vee Jewels (Glass).....	200,000	---------	2,030,000	142,100	2,100,000	----------	-------	130,000
1946								
Blanks	5,670,419	271,500	3,187,479	29,285	7,392,663	267,244	13,197	1,469,491
Semi-Fabricated Jewels	2,114,230	XXXXXXXXX	714,597	34,788	1,878,297	21,236	5,782	929,294
Finished Jewels.......	63,631,718	1,873,906	38,035,701	2,020,578	48,554,749	13,066,857	1,717,454	41,919,719
Vee Jewels...........	8,251	---------	8,566	897	10,255	----------	---------	6,562
Vee Jewels (Glass)....	130,000	---------	2,578,760	180,513	2,166,949	----------	---------	541,811
1947								
Blanks...............	1,375,992	600,700	8,385,920	70,382	4,816,626	55,700	71,119	5,490,286
Semi-Fabricated Jewels	929,294	XXXXXXXXX	2,088,150	29,579	2,436,150	3,189	706	578,105
Finished Jewels.......	41,774,318	2,626,968	81,240,552	4,001,478	64,116,618	8,835,021	961,409	52,690,199
Vee Jewels...........	6,562	---------	18,400	1,840	23,562	----------	---------	1,400
Vee Jewels (Glass)....	541,810	---------	780,448	78,045	1,085,957	----------	---------	236,301

(continued)

CONSUMPTION OF JEWEL BEARINGS IN 1945-50 (cont.):

ITEM	Opening Inventory (Stocks at end of Preceding Year)	PRODUCED DURING YEAR	RECEIPTS DURING YEAR		CONSUMED DURING YEAR	SHIPMENTS DURING YEAR		STOCKS END OF YEAR
	No. of Jewels	No. of Jewels	No. of Jewels	Value	No. of Jewels	No. of Jewels	Value	No. of Jewels
1948								
Blanks................	5,490,286	680,400	8,755,000	83,976	7,503,199	125,400	91,074	7,297,087
Semi-Fabricated Jewels	577,294	XXXXXXXXX	1,559,100	61,546	1,729,100	2,069	524	405,225
Finished Jewels.......	52,679,681	2,576,095	110,874,519	5,856,142	64,853,751	28,764,491	3,708,021	72,512,053
Vee Jewels...........	1,400	---------	77,929	7,793	55,746	----------	---------	23,583
Vee Jewels (Glass)....	236,301	---------	1,528,805	152,880	1,303,132	51,860	6,133	410,114
1949								
Blanks................	7,297,087	249,600	6,846,100	63,749	6,678,922	29,100	63,243	7,684,765
Semi-Fabricated Jewels	345,225	XXXXXXXXX	1,503,900	30,312	1,603,900	1,771	311	243,454
Finished Jewels.......	72,440,053	1,639,051	115,470,915	4,831,534	67,409,529	24,595,448	2,539,000	97,545,042
Vee Jewels...........	22,183	---------	62,846	8,170	70,459	----------	---------	14,570
Vee Jewels (Glass)....	410,114	1,086,052	50,100	6,513	842,123	50,100	6,615	654,043
1950								
Blanks................	7,562,415	795,400	4,531,888	52,865	7,008,289	85,400	2,918	5,796,014
Semi-Fabricated Jewels	297,454	XXXXXXXXX	3,566,000	71,320	3,331,500	2,414	505	529,540
Finished Jewels.......	99,791,348	1,827,750	81,572,837	4,492,904	69,424,772	6,837,118	801,383	106,930,045
Vee Jewels...........	14,570	---------	99,761	12,969	----------	63,599	8,904	50,732
Vee Jewels (Glass)....	654,043	1,499,456	75,891	9,866	1,701,928	75,891	10,765	451,571

CONSUMPTION OF JEWEL BEARINGS (RAW MATERIALS) IN THE UNITED STATES, IN 1945-50

TYPE OF RAW MATERIAL	Opening Inventory (Stocks at end of Preceding Year)	RECEIPTS DURING YEAR		Consumption (Report Quantity of Blanks Processed by your in Part B Col. 3)	SHIPMENTS DURING YEAR		STOCKS END OF YEAR
	Carats	Carats	Value	Carats	Carats	Value	Carats
1945							
SYNTHETIC SAPPHIRE	1,643,961	299,650	7,848	204,000	1,761,574	61,736	55,037
SYNTHETIC RUBY	160,286	10,130	453	132,950	34,025	1,531	4,196
SYNTHETIC SPINEL	---------	--------	-----	--------	----------	------	------
1946							
SYNTHETIC SAPPHIRE	54,592	160,470	4,566	190,305	13,854	1,647	51,788
SYNTHETIC RUBY	3,271	26,585	1,320	55,000	116	9	3,155
SYNTHETIC SPINEL	---------	--------	-----	--------	----------	------	------
1947							
SYNTHETIC SAPPHIRE	59,725	86,515	3,278	64,438	2,000	630	52,802
SYNTHETIC RUBY	60,180	26,500	2,976	17,187	----------	------	69,493
SYNTHETIC SPINEL	26,620	--------	-----	11,020	----------	------	15,600
(continued)							

CONSUMPTION OF JEWEL BEARINGS (RAW MATERIALS) IN THE UNITED STATES IN 1945-50 (cont.):

TYPE OF RAW MATERIAL	Opening Inventory (Stocks at end of Preceding Year)	RECEIPTS DURING YEAR		Consumption (Report Quantity of Blanks Processed by your in Part B Col. 3)	SHIPMENTS DURING YEAR		STOCKS END OF YEAR
	Carats	Carats	Value	Carats	Carats	Value	Carats
1948							
SYNTHETIC SAPPHIRE	44,802	141,074	8,105	145,000	2,383	315	38,493
SYNTHETIC RUBY	69,493	21,016	1,051	82,238	------	-----	8,271
SYNTHETIC SPINEL	15,600	--------	-----	15,600	------	-----	------
1949							
SYNTHETIC SAPPHIRE	38,493	52,275	637	70,299	709	1,602	20,185
SYNTHETIC RUBY	8,271	18,550	645	20,550	------	-----	6,271
SYNTHETIC SPINEL	------	--------	-----	--------	------	-----	------
1950							
SYNTHETIC SAPPHIRE	25,495	54,795	2,347	37,845	10,000	100	32,445
SYNTHETIC RUBY	6,422	2,200	610	4,300	------	-----	4,322
SYNTHETIC SPINEL	------	--------	-----	--------	------	-----	------
SYNTHETIC SAPPHIRE RODS (in inches)	627"	735"	-----	1,152(est.)	------	-----	210"

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OSCAR L. CHAPMAN, Secretary
J. J. FORBES, Director

FOR RELEASE APRIL 1952

MINERAL MARKET REPORT
M. M. S. NO. 2062

DIRECTORY OF FUEL-BRIQUETTING OPERATIONS IN THE UNITED STATES THAT REPORTED PRODUCTION FOR 1951

(Directory of packaged-fuel operations issued separately)

State	Name and address of operator	Location of plant	Raw fuel used, as reported by operator
EASTERN STATES:			
Pennsylvania:	AMERICAN BRIQUET COMPANY 1417 Sansom Street Philadelphia 2, Pa.	Lykens	Pennsylvania anthracite.
	ECCO MANUFACTURING COMPANY 1417 Sansom Street Philadelphia 2, Pa.	Pine Grove	Pennsylvania anthracite.
	READING BRIQUET COMPANY 1417 Sansom Street Philadelphia 2, Pa.	Locust Gap	Pennsylvania anthracite and bituminous high-volatile.
	READING BRIQUET COMPANY 1417 Sansom Street Philadelphia 2, Pa.	Saint Nicholas	Pennsylvania anthracite and bituminous high-volatile.
West Virginia:	BERWIND FUEL COMPANY 141 West Jackson Boulevard Chicago 4, Ill.	Berwind	Bituminous low-volatile.
	COAL PROCESSING CORPORATION 230 South Clark Street Chicago 4, Ill.	Glen Rogers	Bituminous low-volatile.
CENTRAL STATES:			
Arkansas:	ARKO BRIQUETTES, INC. P. O. Box 151 Fort Smith, Ark.	Fort Smith	Semianthracite
	DIXIE MODERN BRIQUETTE CO. 1401 North Fourth Street Fort Smith, Ark.	Fort Smith	Bituminous low- and high-volatile.

Prepared by Golden V. Chiriaco, under the supervision of J. A. Corgan, Chief, Anthracite and Coke Sections, Coal Branch, T. W. Hunter, Chief.

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DIRECTORY OF FUEL-BRIQUETTING OPERATIONS IN THE UNITED STATES THAT REPORTED PRODUCTION FOR 1951--(continued)

State	Name and address of operator	Location of plant	Raw fuel used, as reported by operator
CENTRAL STATES: (Continued)			
Illinois:	COAL PROCESSING CORPORATION 230 South Clark Street Chicago 4, Ill.	Buckner	Bituminous high-volatile.
Indiana:	CHICAGO BRIQUET COMPANY, INC. Riley Road and Canal Street East Chicago, Ind.	East Chicago	Petroleum coke and bituminous low-volatile.
Michigan:	JOHNSON COAL CUBING CO., INC. 9309 Hubbell Avenue Detroit 28, Mich.	Detroit	Pennsylvania anthracite and bituminous low-volatile.
	UNITED ICE & FUEL COMPANY 2202 North Dort Highway Flint 7, Mich.	Flint	Bituminous low-volatile.
Missouri:	ST. LOUIS BRIQUETTE COMPANY 3183 Morganford Road St. Louis 16, Mo.	St.Louis	Bituminous low-volatile and petroleum coke.
	UNIVERSAL COAL WASHING COMPANY 230 North Michigan Avenue Chicago 1, Ill.	Kansas City	Arkansas hard coals.
Nebraska:	OMAHA COKE & COAL BLOX COMPANY 31st Avenue and Paxton Blvd. Omaha 11, Neb.	Omaha	Petroleum coke and semianthracite.
North Dakota:	DAKOTA BRIQUETS & TAR PRODUCTS Dickinson, North Dakota	Dickinson	Lignite char.
Wisconsin:	BERWIND FUEL COMPANY 141 West Jackson Boulevard Chicago 4, Ill.	Superior	Bituminous low-volatile and Pennsylvania anthracite.
	COAL PROCESSING CORPORATION 230 South Clark Street Chicago 4, Ill.	Superior	Bituminous low-volatile and Pennsylvania anthracite.
	HAAS COAL & DOCK COMPANY 5133 Sixth Avenue Kenosha, Wis.	Kenosha	Bituminous low-volatile.
	ARTHUR KUESEL COAL COMPANY 794 North Water Street Milwaukee 2, Wis.	Milwaukee	Bituminous low-volatile and Pennsylvania anthracite.

DIRECTORY OF FUEL-BRIQUETTING OPERATIONS IN THE UNITED STATES THAT REPORTED PRODUCTION FOR 1951--Continued

State	Name and address of operator	Location of plant	Raw fuel used, as reported by operator.
CENTRAL STATES: (Continued)			
Wisconsin: (Continued)	THE C. REISS COAL COMPANY Reiss Building Sheboygan, Wisconsin	Ashland	Bituminous low-volatile and Pennsylvania anthracite.
	THE C. REISS COAL COMPANY Reiss Building Sheboygan, Wisconsin	Green Bay	Bituminous low-volatile and bituminous high-volatile.
	THE C. REISS COAL COMPANY Reiss Building Sheboygan, Wisconsin	Sheboygan	Pennsylvania anthracite, bituminous low-volatile.
	STOTT BRIQUET COMPANY, INC. 2200 University Avenue St. Paul 4, Minnesota	Superior	Pennsylvania anthracite, bituminous low-volatile and petroleum coke.
	UBBINK FUEL & DOCK COMPANY 108 South Wisconsin Street Port Washington, Wisconsin	Port Washington	Bituminous low-volatile.
	THE UNITED COAL & DOCK COMPANY 704 West Wisconsin Avenue Milwaukee 3, Wisconsin	Milwaukee	Bituminous low-volatile and Pennsylvania anthracite.
PACIFIC COAST STATES:			
Oregon:	PORTLAND GAS & COKE COMPANY Public Service Building Portland 4, Oregon	Portland	Residual carbon from manufacture of oil gas.
Washington:	SEATTLE GAS COMPANY 1507 Fourth Avenue Seattle 11, Washington	Seattle	Residual carbon from manufacture of oil gas.

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
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J. J. FORBES, Director

FOR RELEASE MAY 1952

MINERAL MARKET REPORT
M.M.S. NO. 2064

LIST OF MANUFACTURERS OF MACHINERY USED IN MAKING FUEL BRIQUETS AND PACKAGED FUEL

In response to numerous inquiries for information on the manufacture of fuel-briquetting and packaged-fuel machinery, the Bureau of Mines has compiled the following list, which includes only those firms that responded to the Bureau's recent annual canvass. The list is limited to companies engaged in the manufacture of dryers, presses, wrapping machines, or other machinery specifically used at the plant in the manufacture or wrapping of these products.

The Bureau of Mines appreciates the cooperation of these manufacturers but assumes no responsibility for the companies listed or the merits of their product. Additional names will be added to the list upon request.

MAKING FUEL-BRIQUET EQUIPMENT

Komarek-Greaves & Company
2939-2945 North Mozart Street
Chicago 18, Illinois

Vulcan Iron Works
Process Equipment Division
Wilkes-Barre, Pennsylvania

The Webb Corporation
Webb City, Missouri

MAKING PACKAGED-FUEL EQUIPMENT

Package Machinery Company
East Longmeadow Post Office
Springfield, Massachusetts

MAKING BOTH FUEL-BRIQUET AND PACKAGED-FUEL EQUIPMENT

Chisholm, Boyd & White Company
57th and Wallace Streets
Chicago 21, Illinois

Fernholtz Machinery Company
8468 Melrose Place
Los Angeles 46, California

Glenn Smith
Riley Road and Canal Street
East Chicago, Indiana

International Clay Machinery Co.
P. O. Box 973
Dayton 1, Ohio

Johnson Process
16845 Plainview Road
Detroit 19, Michigan

Prepared by Golden V. Chiriaco, under the supervision of J. A. Corgan, Chief, Anthracite and Coke Sections, Coal Branch, T. W. Hunter, Chief.

Interior—Duplicating Section, Washington, D. C.
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MINERAL MARKET REPORT
MMS NO. 2065

LIME IN 1950

A new high record of lime production in the United States was made in 1950, according to reports of producers to the Bureau of Mines, United States Department of the Interior. Sales totaled 7,478,416 short tons, 18 percent higher than in 1949, and 3 percent greater than the record output of 1948. Of the total sales 75 percent were in the form of quicklime, and 25 percent hydrated lime. The average value of quicklime per ton increased from $10.48 in 1949 to $10.57 in 1950. Hydrated lime value increased from $12.31 in 1949 to $12.80 in 1950. The number of active plants declined from 180 to 168.

Table 1.-Lime sold by producers in the United States, 1949-50, by types and major uses

	1949		1950	
	Short tons	Value 1/	Short tons	Value 1/
By types:				
Quicklime	4,624,356	$48,464,831	5,593,315	$59,126,427
Hydrated	1,693,946	20,854,543	1,885,101	24,121,563
Total lime 2/	6,318,302	69,319,374	7,478,416	83,247,990
By uses:				
Agricultural:				
Quicklime	111,813	1,063,125	103,823	1,037,222
Hydrated	216,715	2,481,195	228,864	2,567,149
Total	328,528	3,544,320	332,687	3,604,371
Building:				
Quicklime	223,533	2,849,582	281,924	3,585,189
Hydrated	828,564	10,794,161	967,065	13,296,618
Total	1,052,097	13,643,743	1,248,989	16,881,807
Chemical and Industrial:				
Quicklime	2,970,302	28,621,898	3,448,125	32,778,456
Hydrated	648,667	7,579,187	689,172	8,257,796
Total	3,618,969	36,201,085	4,137,297	41,036,252
Refractory (dead-burned dolomite)	1,318,708	15,930,226	1,759,443	21,725,560

1/ Selling value, f.o.b. plant, excluding cost of container.
2/ Includes lime used by producers (captive tonnage) as follows - 1949: 355,367 tons, $3,171,392; 1950: 456,191 tons, $3,977,905.

Prepared by Oliver Bowles and F. M. Barsigian, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

(OVER)

Table 2. - Lime (quick and hydrated) sold by producers in the United States, 1949-50, by States

State or Territory	1949			1950		
	Active plants	Short tons	Value	Active plants	Short tons	Value
Alabama------------	8	359,446	$3,203,564	7	389,071	$3,577,850
Arizona------------	4	43,529	607,709	4	51,530	717,885
Arkansas-----------	1	(1)	(1)	1	(1)	(1)
California---------	7	153,483	2,516,262	6	171,440	2,722,835
Colorado-----------	1	(1)	(1)	-	-	-
Connecticut--------	1	(1)	(1)	1	(1)	(1)
Florida------------	2	(1)	(1)	2	(1)	(1)
Georgia------------	1	7,028	67,252	1	11,998	121,556
Hawaii-------------	1	8,404	226,926	1	8,141	219,861
Illinois-----------	6	276,161	3,197,890	6	367,485	4,465,413
Indiana------------	1	(1)	(1)	1	(1)	(1)
Maine--------------	2	(1)	(1)	1	(1)	(1)
Maryland-----------	8	64,299	617,696	8	64,687	691,843
Massachusetts------	3	107,931	1,360,328	3	139,357	1,830,625
Michigan-----------	3	(1)	(1)	3	(1)	(1)
Minnesota----------	1	(1)	(1)	1	(1)	(1)
Missouri-----------	8	878,561	8,035,117	7	1,035,176	9,447,669
Montana------------	2	(1)	(1)	2	(1)	(1)
Nevada-------------	3	(1)	(1)	3	(1)	(1)
New Jersey---------	3	(1)	(1)	3	(1)	(1)
New York-----------	2	(1)	(1)	2	(1)	(1)
Ohio---------------	18	1,712,248	20,321,387	18	2,142,344	26,273,098
Oklahoma-----------	1	(1)	(1)	1	(1)	(1)
Oregon-------------	-	-	-	2	(1)	(1)
Pennsylvania-------	34	911,065	10,190,679	30	1,086,451	12,663,074
Puerto Rico--------	5	7,347	184,618	4	8,166	180,828
South Dakota-------	1	(1)	(1)	1	(1)	(1)
Tennessee----------	6	117,053	1,108,139	5	98,232	958,325
Texas--------------	8	173,724	1,739,185	9	216,439	2,074,367
Utah---------------	5	36,082	355,516	4	49,419	456,471
Vermont------------	3	28,914	356,381	3	32,843	415,910
Virginia-----------	13	349,132	3,213,897	11	428,339	3,861,932
Washington---------	2	(1)	(1)	2	(1)	(1)
West Virginia------	6	350,311	3,535,352	5	(1)	(1)
Wisconsin----------	10	107,339	1,254,751	10	124,530	1,448,095
Undistributed 1/--	-	626,245	7,226,725	-	1,052,768	11,120,353
Total--------	180	6,318,302	69,319,374	168	7,478,416	83,247,990

1/ Figures that may not be shown separately are combined as "Undistributed."

Table 3 - Chemical and industrial lime (quick and hydrated) sold by producers in the United States, 1949-50, by uses

	1949		1950	
	Short tons	Value	Short tons	Value
Alkalies (ammonium, potassium, and sodium compounds) 1/	1,728	$20,928	(1/)	(1/)
Asphalts and other bitumens	180	2,445	1,639	$20,363
Bleach, liquid and powder 2/	7,063	81,549	6,770	81,863
Brick, sand-lime and slag	19,369	223,247	28,297	329,676
Brick, silica (refractory)	12,942	153,594	15,126	191,070
Calcium carbide and cyanamid	480,141	4,023,613	480,391	4,053,972
Calcium carbonate (precipitated)	22,458	199,161	24,208	246,030
Coke and gas (gas purification and plant byproducts)	24,697	254,638	26,642	273,490
Explosives	(1/)	(1/)	2,693	30,753
Food Products:				
Creameries and dairies	737	13,486	823	12,729
Gelatin	5,790	68,154	6,409	72,524
Stock feed	26,818	300,976	19,933	212,493
Other 3/	1,894	25,009	1,972	24,702
Glassworks	171,132	1,715,181	210,273	2,106,404
Glue	7,922	83,199	9,279	97,635
Grease, lubricating	3,195	32,940	4,804	64,808
Insecticides, fungicides, and disinfectants	79,608	920,555	80,051	974,192
Medicines and drugs	10,407	97,256	13,671	132,170
Metallurgy:				
Nonferrous smelter flux	1,391	20,317	3,428	53,069
Steel (open-hearth and electric furnace flux)	878,189	8,490,669	1,132,073	11,038,896
Ore concentration 4/	183,862	1,747,779	211,993	2,010,627
Wire drawing	17,700	216,694	19,637	247,859
Other 5/	27,032	327,788	13,956	160,176
Paints	17,903	208,519	26,472	306,902
Paper Mills	575,507	5,889,359	617,956	6,332,894
Petroleum refining	46,620	500,256	43,535	475,138
Rubber manufacture	715	7,967	908	11,455
Salt refining	7,492	68,905	9,382	82,455
Sewage and trade-wastes treatment	91,879	1,007,634	91,244	1,052,356
Soap and fat	3,184	31,964	1,743	17,637
Sugar refining	35,456	529,169	35,366	513,779
Tanneries	75,052	822,110	83,152	925,679
Varnish	329	5,046	366	6,266
Water purification	498,217	5,119,362	566,727	5,622,409
Wood distillation	4,787	49,250	6,484	67,313
Undistributed 6/	87,071	951,201	112,977	1,169,970
Unspecified	190,502	1,991,165	226,417	2,016,498
Total	3,618,969	36,201,085	4,137,297	41,036,252

1/ Included with "Undistributed."
2/ Bleach used in paper mills excluded from "Bleach" and included with "Paper mills."
3/ Includes citrates, tartrates, and miscellaneous food products.
4/ Includes flotation, cyanidation, bauxite purification, and magnesium manufacture.
5/ Includes barium and vanadium processing, cupola, gold recovery, and unspecified metallurgical uses.
6/ Includes Alcohol, alkalies (1950 only), explosives (1949 only), oil drilling, petrochemicals (glycol), plastics, polishing compounds, retarder, sulfur, tobacco, and miscellaneous industrial uses.

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Oscar L. Chapman, Secretary J. J. Forbes, Director

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MINERAL MARKET REPORT
MMS No. 2066

TIN RECOVERED BY DETINNING PLANTS IN 1951

Secondary tin recovered by detinning plants, as metal and in chemical compounds, decreased 9 percent in 1951 compared with 1950 according to the Bureau of Mines, United States Department of the Interior. The total tin recovered was 4,071 short tons in 1951 against 4,467 in 1950. Tin-plate clippings and old cans were the source of 3,992 tons in 1951, of which 3,529 was reclaimed as metal in the form of pigs, and 463 tons in the form of tin compounds. During 1950 the usage of such material provided 4,341 tons, comprising 3,697 tons of metal and 644 in compounds. The treatment of other tin-bearing materials accounts for the remaining production of 79 tons in 1951 and 126 in 1950.

The industry reported treating 481,443 long tons of tin-plate clippings in 1951. This was the largest tonnage of record, and exceeded the previous peak reached in 1950 by nearly 3 percent. The average cost of such clippings delivered at plants increased from $30.00 a long ton in 1950 to $41.28 in 1951. The average quoted composite price of No. 1 heavy-melting steel scrap was $43.15 in 1951 - the highest of record. Ceiling prices for steel scrap were established by the Office of Price Stabilization effective February 7, 1951. Steel scrap is one of the products of the detinning industry, being sold to open-hearth mills. Old cans processed increased 32 percent to 22,131 long tons in 1951, compared with 16,818 tons in 1950; this was a small figure, however, in comparison with the record use of 175,870 tons in 1943. Tin recovered from tin-plate clippings in 1951 was 3,826 tons, 9 percent less than 1950, while that from old cans, 166 tons (mostly in the form of pig tin), increased 38 percent.

The average quantity of tin recovered per long ton of tin-plate scrap treated was 15.89 pounds in 1951, compared with 17.98 pounds in 1950. Before the introduction of electrolytic tin plate, and wartime restrictions on the weight of tin on the hot-dipped product, recoveries averaged around 37 pounds per ton of material detinned. Lower recoveries have for several years continued to reflect the treatment of a larger proportion of electrolytic tinplate carrying a much thinner coating of tin than the hot-dipped product. The average quantity of tin recovered per long ton of old tin-coated containers increased slightly from 14.30 pounds in 1950 to 14.98 pounds in 1951.

Imports of tin-plate scrap were 51,571 long tons in 1951 against 42,394 in 1950 (detinned, this material would yield about 400 tons of tin). In 1950 exports of tin-plate scrap were 810 long tons (562 in 1950); mostly to Mexico and Japan.

Prepared April 16, 1952, by Abbott Renick and John B. Umhau under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Secondary tin recovered at detinning plants in the United States, 1950 & 1951.

	1950	1951
Scrap treated:		
Clean tin plate clippings (long tons)................	469,417	481,443
Old tin-coated containers (long tons)................	16,818	22,131
	486,235	503,574
Tin recovered from new tin-plate clippings (short tons)...	4,221	3,826
Tin recovered from old tin-coated containers (short tons).	120	166
	4,341	3,992
Tin recovered as metal (short tons)......................	3,697	3,529
Tin recovered in compounds (short tons)..................	644	463
	1/4,341	1/3,992
Weight of tin compounds produced (short tons)............	1,375	958
Average quantity of tin recovered per long ton of clean tin-plate scrap treated (pounds).................	17.98	15.89
Average quantity of tin recovered per long ton of old tin-coated containers treated (pounds)............	14.30	14.98

1/ From tin-plate clippings and old containers only. In addition, detinners recovered 79 tons of tin as metal and in compounds from tin-base scrap and residues in 1951, and 126 tons from these sources in 1950.

Tin-plate scrap imported into the United States, by countries 1950 & 1951, in long tons 1/.

Country	1950	1951
Algeria	614	453
Australia	8,094	11,169
Br. E. Africa	–	20
Canada	21,690	23,364
Ceylon	65	–
China	46	194
Columbia	–	10
Cuba	1,302	2,039
Denmark	154	278
French Morroco	3,321	2,716
Ireland	631	–
Mexico	72	40
New Zealand	156	2,028
Nigeria	2/	–
Peru	106	–
Sweden	528	2,323
Tunisia	60	228
Turkey	148	–
Union of South Africa	5,247	6,187
United Kingdom	160	522
Total	42,394	51,571

1/ Compiled from records of the U. S. Department of Commerce.
2/ Less than a ton.

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary
J. J. FORBES, Director

April 17, 1952

MINERAL MARKET REPORT
M.M.S. NO. 2067

DIRECTORY OF COAL-GAS RETORT PLANTS IN EXISTENCE IN THE UNITED STATES, DECEMBER 31, 1951

Operator	Address	Location of plant	Number of retorts
COLORADO			
Public Service Company of Colorado	900 15th Street, Denver 2, Colorado	Grand Junction	18
CONNECTICUT			
The Connecticut Power Company	266 Pearl Street, Hartford, Connecticut	Stamford	16 1/
INDIANA			
Northern Indiana Fuel & Light Company	Auburn, Indiana	Auburn	18 1/
IOWA			
The Key City Gas Company	669 Main Street, Dubuque, Iowa	Dubuque	15
MASSACHUSETTS			
Fitchburg Gas & Electric Light Company	89 Broad Street, Boston 10, Massachusetts	Fitchburg	16
Lowell Gas Company	95 East Merrimack Street, Lowell, Massachusetts	Lowell	100 1/
Taunton Gas Light Company	41 Taunton Green, Taunton, Massachusetts	Taunton	48
MICHIGAN			
Michigan Gas & Electric Company	P. O. Box 413, Three Rivers, Michigan	Hancock Marquette	24 6
NORTH CAROLINA			
Piedmont Natural Gas Company	P. O. Box 1968, Charlotte, North Carolina	Charlotte	48
Public Service Company of North Carolina ...	88 Patton Avenue, Asheville, North Carolina	Asheville	36
SOUTH CAROLINA			
Piedmont Natural Gas Company	P. O. Box 1968, Charlotte, North Carolina	Greenville	24
WISCONSIN			
Wausau Gas Company	319 Jackson Street, Wausau, Wisconsin	Wausau	30

1/ In stand-by condition.

Prepared by Maxine M. Otero, J. A. DeCarlo, and J. A. Corgan, Chief, Anthracite and Coke Sections, under the supervision of T. W. Hunter, Chief, Coal Branch, Fuels and Explosives Division.

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FOR IMMEDIATE RELEASE MINERAL MARKET REPORT NO. MMS 2068

CARBON BLACK PRODUCTION INCREASES 21 PERCENT IN 1951

Production of carbon black in the United States in 1951 totaled 1,677,363 thousand pounds, 21 percent above 1950. Total sales increased 4 percent to 1,563,138 thousand pounds. Producers' stocks increased 113,691 thousand pounds to 203,234 thousand pounds.

Largest gains were made in the production and sales of furnace blacks. Production of these increased 35 percent. Sales of furnace blacks in 1951 increased 16 percent while sales of contact blacks declined 12 percent. Furnace blacks accounted for 62 percent of total sales in 1951 compared with 56 percent in 1950.

Stocks of contact blacks rose from a 36 days' supply at the first of the year to an 88 days' supply on December 31, 1951. Stocks of furnace blacks rose from a 10 days' to a 30 days' supply.

The value at plants of total production was $107,436,000. The average value was 6.41 cents per pound compared with 6.12 cents in 1950.

"Rest of Texas" showed the largest gain in production and Arkansas produced carbon black for the first time.

The quantity of natural gas used in the production of carbon black increased slightly to 426,423 million cubic feet with an average value of 5.21 cents per thousand cubic feet. The quantity of liquid hydrocarbons consumed increased 69 percent to 182,343,000 gallons and accounted for 52 percent of the furnace blacks produced.

Exports increased 8 percent to 433,493 thousand pounds. They were controlled by U. S. Department of Commerce during the entire year.

At the end of 1951, 58 plants were producing. Three new furnace plants began operation in 1951. Part of a furnace plant was moved from Kansas to Arkansas and another furnace plant was moved from Oklahoma to Texas. Daily capacity at the end of 1951 was 5,163,300 pounds per day, compared with 4,075,200 at the end of 1950.

Prepared by D. S. Colby and B. E. Oppegard under the supervision of H. J. Barton, Acting Petroleum and Natural Gas Economics Coordinator, Petroleum and Natural Gas Branch, Fuels and Explosives Division.

Salient statistics of carbon black produced from natural gas and liquid hydrocarbons in the U. S., 1950-51

	1950	1951
Number of producers reporting	20	20
Number of plants	53	58
Quantity produced:		
By States and districts		
Louisiana thousand pounds	226,177	258,989
Texas:		
Panhandle do	638,159	700,659
Rest of State do	310,705	449,287
Total Texas do	948,864	1,149,946
Other States (Ark., Calif., Kans., N. Mex., Okla.) do	206,949	268,428
Total United States do	1,381,990	1,677,363
By processes:		
Contact do	616,765	645,881
Furnace do	765,226	1,031,482
Quantity sold:		
Domestic:		
To rubber companies do	1,030,368	1,061,229
To ink companies do	50,903	45,496
To paint companies do	11,139	11,366
For miscellaneous purposes do	16,661	11,554
Total do	1,109,071	1,129,645
Exports do	399,568	433,493
Total sales do	1,508,639	1,563,138
Losses do	269	534
Stocks held by producers Dec. 31:		
Contact types do	65,342	123,299
Furnace types do	24,201	79,935
Total do	89,543	203,234
Value at plants of carbon black produced:		
Total thousand dollars	84,604	107,436
Average per pound cents	6.12	6.41
Quantity of natural gas used million cubic feet	410,852	426,423
Average yield per M cu. ft. pounds	2.57	2.67
Average value of gas per M cu. ft. cents	4.79	5.21
Volume of liquid hydrocarbons used thousand gallons	107,707	182,343
Average yield per gallon pounds	3.02	2.96

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MINERAL MARKET REPORT
M. M. S. No. 2070

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE.

PLATINUM-GROUP METALS IN 1951

Features of the platinum-group metals in 1951 were large total domestic consumption for the second consecutive year and adoption of controls on sales of platinum, according to the Bureau of Mines, United States Department of the Interior. Although sales of platinum were substantially smaller in 1951 than in 1950, total sales of the platinum-group metals were only 7 percent less, because of the large increase in sales of palladium. Inadequate supplies of platinum led to the adoption on April 1, 1951 of National Production Authority Order M-54 which forbids the purchase of platinum for investment or speculative purposes and prohibits its delivery or acceptance for use in many consumer items, largely jewelry. Platinum in inventory of manufacturers of the prohibited items on April 1 is exempted from the provisions of the Order. The strong demand for the platinum-group metals in 1951 was due largely to requirements for the military program and defense-supporting industries.

The accepted quoted retail prices of the platinum-group metals remained unchanged during 1951, and were as follows per fine troy ounce: Platinum $93, palladium $24, iridium $200, osmium $200-$215, rhodium $125, and ruthenium $93. However, substantial sales of platinum are reported to have been made at prices higher than $93. The two London refineries that handle the production of platinum-group metals of Canada and South Africa maintained prices for platinum during 1951 at £33¼ ($93.10) and £27 ($75.60) per ounce, respectively, reserving most of the supplies available to them for essential requirements; prices for the remainder were bid of considerably in the free market. The London price for palladium ranged from £8 ($22.40) to £9 ($25.20) per ounce during 1951.

Total domestic sales of platinum were 32 percent smaller in 1951 than in the preceding year. The chemical and electrical industries accounted for 47 percent and 33 percent, respectively, while the jewelry trade, normally the largest outlet, dropped to third place, taking only 12 percent of the total sales. Noteworthy was the demand for platinum for use in the manufacture of fiber glass. Refining of platinum in the United States in 1951 was at a rate well below that of 1950, but imports of refined platinum were substantially greater. Stocks of refiners and dealers rose moderately.

Total domestic sales of palladium were 48 percent greater in 1951 than in 1950, and it is noteworthy that sales of palladium exceeded those of platinum over an annual period for the first time on record. The domestic consumption of palladium by uses was: Chemical 17 percent, electrical 52, dental and medical 14, jewelry and decorative 16, and miscellaneous less than one. Refining of

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Prepared by James E. Bell and Kathleen M. McBreen, under the supervision of M. H. Kline, Chief, Rare and Precious Metals Branch, Minerals Division.

palladium in the United States in 1951 was at a rate slightly greater than in 1950, and imports of refined palladium were up sharply. Stocks of refiners and dealers increased considerably.

PRODUCTION

Domestic refining of new platinum-group metals was 31 percent smaller in 1951 than in 1950. Of the total new metal refined 78 percent was recovered from crude platinum both domestic and foreign, and 22 percent was recovered as a byproduct of gold ores and copper ores.

New platinum-group metals recovered by refiners in the United States in 1951, by sources, in troy ounces

	Platinum	Palladium	Iridium	Osmium	Rhodium	Ruthenium	Total
Domestic from –							
Crude platinum....	16,543	101	2,423	483	235	50	19,835
Gold and copper refining........	5,825	5,161	64	—	125	6	11,181
	22,368	5,262	2,487	483	360	56	31,016
Foreign from crude platinum..........	10,909	1,258	1,930	1,233	2,519	1,466	19,315
Total recovery:							
1951..............	33,277	6,520	4,417	1,716	2,879	1,522	50,331
1950..............	56,757	11,819	2,351	1,295	433	474	73,129

Secondary platinum-group metals recovered in 1951 comprised 22,799 ounces of platinum, 28,073 ounces of palladium, 1,029 ounces of iridium, 245 ounces of osmium, 467 ounces of rhodium, and 1,163 ounces of ruthenium — a total of 53,776 ounces. The total recovery of secondary platinum-group metals in the preceding year was 58,113 ounces. Substantial quantities of worn-out catalysts, spinnerets, laboratory ware, and other equipment are returned by industry to refiners for refining or reworking. The refined metals recovered from this source (or the equivalent in refined metals) are returned to the consumers. The platinum-group metals so recovered are not regarded as secondary production, nor are they included in the figures for secondary metals.

FOREIGN TRADE

(Figures on imports and exports are from records of the U. S. Department of Commerce)

Imports. - Total imports of platinum-group metals into the United States in 1951 were 41 percent above those of 1950, and were a record high for the second consecutive year. The principal sources were Canada (289,208 ounces), Colombia (23,886 ounces), Japan (114,731 ounces), Netherlands (43,098 ounces), United Kingdom (19,940 ounces), Union of South Africa (77,796 ounces), and U. S. S. R. (16,075 ounces).

Platinum metals (unmanufactured) imported for consumption in the United States, 1950-51, in troy ounces

Material	1950	1951 1/
Unrefined materials:		
Ores and concentrates of platinum metals	628	197
Grains and nuggets (including crude, dust and residues)	35,793	26,025
Sponge and scrap	8,783	34,178
Osmiridium	3,242	2,283
	48,446	62,683
Refined metals:		
Platinum	203,790	268,275
Palladium	147,173	239,151
Iridium	6,802	3,144
Osmium	1,517	1,320
Rhodium	13,152	20,665
Ruthenium	6,754	6,059
	379,188	538,614
	427,634	601,297

1/ Preliminary and subject to revision.

Exports. - Exports of platinum in 1951 were 8,760 ounces (12,753 ounces in 1950), and those of the other platinum-group metals together were 52,088 ounces (24,946 ounces in 1950).

SALES

Total sales of platinum-group metals to domestic consumers in 1951 were 462,535 ounces, compared with 495,945 ounces in 1950.

Sales of platinum to domestic consumers were 209,695 ounces, equivalent to 45 percent of the total sales of platinum-group metals. Corresponding figures for 1950 are 308,998 ounces and 62 percent. Reflecting the restrictions imposed by Order M-54, sales for jewelry and decorative uses dropped to 24,759 ounces in 1951 from 127,374 ounces in 1950.

Sales of palladium were 222,545 ounces equivalent to 48 percent of the total sales of the group, compared with 150,456 ounces and 30 percent in the preceding year. Gains in sales were made by each use, particularly by the electrical industry.

Sales of iridium, osmium, rhodium, and ruthenium together accounted for 7 percent of the total of platinum-group metals sold in 1951. By quantity their sales were as follows: Iridium 5,556 ounces, osmium 2,441 ounces, rhodium 15,634 ounces, and ruthenium 6,664 ounces -- a total of 30,295 ounces.

The table that follows shows sales of platinum-group metals to consumers in the United States in 1950 and 1951, in troy ounces.

Platinum-group metals sold to consuming industries in the United States in 1950 and 1951, in troy ounces

Industry	Platinum	Palladium	Iridium, osmium, rhodium, and ruthenium	Total
1950				
Chemical	114,430	16,673	13,875	144,978
Electrical	45,229	80,024	3,316	128,569
Dental and medical	18,182	18,359	371	36,912
Jewelry and decorative	127,374	35,293	12,810	175,477
Miscellaneous and undistributed	3,783	107	6,119	10,009
Total	308,998	150,456	36,491	495,945
1951				
Chemical	97,813	38,527	16,834	153,174
Electrical	70,144	116,601	3,340	190,085
Dental and medical	14,475	30,497	162	45,134
Jewelry and decorative	24,759	35,500	5,379	65,638
Miscellaneous and undistributed	2,504	1,420	4,580	8,504
Total	209,695	222,545	30,295	462,535

STOCKS

Stocks of platinum-group metals held by refiners, importers, and dealers were 313,891 ounces on December 31, 1951, an increase of 18 percent from December 31, 1950.

Stocks of platinum-group metals held by refiners, importers, and dealers in the United States, Dec. 31, 1948-1951, in troy ounces

Year	Platinum	Palladium	Iridium, osmium, rhodium and ruthenium
1948	146,823	142,211	34,540
1949	138,049	122,408	35,587
1950	125,234	107,854	33,474
1951	138,977	138,099	36,815

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

May 1, 1952

MINERAL MARKET REPORT
M.M.S. NO. 2069

DIRECTORY OF BEEHIVE-COKE PLANTS IN THE UNITED STATES THAT PRODUCED COKE IN 1951

Operator	Address	Name or location of plant	Number and type of ovens available	
			Machine drawn	Hand drawn
COLORADO				
Carbondale Coke Company	P. O. Box 7772, Denver 15, Colorado	Carbondale	- -	20
KENTUCKY				
Hellier Coal & Coke Company, Inc.	1003 Union National Bank Building, Youngstown, Ohio	Hellier	195	- -
PENNSYLVANIA		Beaver County		
Jones & Laughlin Steel Corporation	Third Avenue & Ross Street, Pittsburgh 30, Pennsylvania	Aliquippa	240	- -
		Bedford County		
Riddlesburg Mining Company	Riddlesburg, Pennsylvania	Broadtop	- -	198
		Fayette County		
Amore Coal Company	P. O. Box 141, Fairchance, Pennsylvania	Ada	- -	40
Hillman Coal & Coke Company	1914 Grant Building, Pittsburgh 19, Pennsylvania	Alicia #1 Allison	400 395	- - - -
Belle Vernon Coal & Coke Company	Belle Vernon, Pennsylvania	Belle Vernon	58	13
S. B. & S. Coal Company, Inc.	74 Morgantown Street, Fairchance, Pennsylvania	Bitner	60	- -
Genovese Coal Company	93 South Mount Vernon Avenue, Uniontown, Pennsylvania	Brier Hill	300	- -
Republic Steel Corporation	Republic Building, Cleveland 1, Ohio	Brownsville	295	- -
Wemak Coke Company	901 Mulberry Street, Scottdale, Pennsylvania	Clarissa	- -	30
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Collier Continental #1	400 400	- - - -
Sterle Coal Company	R. D. #3 - Box 227, Uniontown, Pennsylvania	Crawford #2	- -	30
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Crossland	120	- -
Hillman Coal & Coke Company	1914 Grant Building, Pittsburgh 19, Pennsylvania	Crystal	88	- -
Bortz Coal Company	Union Trust Building, Uniontown, Pennsylvania	Daugherty	70	- -
J. & G. Coke Company	621 Snyder Street, Connellsville, Pennsylvania	Davidson	280	- -
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Dearth	250	- -
Bridgeview Coal Company	97 East Main Street, Uniontown, Pennsylvania	Donald #2	240	- -
B. & H. Coal & Coke Company	P. O. Box 671, Masontown, Pennsylvania	Donald #3	140	- -
Leckrone Coal & Coke Company	R. D. #1 - Box 16, McClellandtown, Pennsylvania	Emery	32	- -
Phillips Coal & Coke Company	24 Clark Street, Uniontown, Pennsylvania	Fairbank	200	- -
Jem Coal & Coke Company	306 North Main Street, Masontown, Pennsylvania	Geneva	52	28
Karl Kahley	Waltersburg, Pennsylvania	Genuine	- -	58
M. & M. Coal & Coke Company	P. O. Box 1008, Uniontown, Pennsylvania	Gilmore	- -	80
Hillman Coal & Coke Company	1914 Grant Building, Pittsburgh 19, Pennsylvania	Griffin #2	193	- -
Weirton Coal Company	Weirton, West Virginia	Isabella	136	- -
Lindsey Coal Company	602 Johnson Avenue, Connellsville, Pennsylvania	Jimtown	- -	20
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Kyle	247	- -
Luzerne Coke Company	La Belle, Pennsylvania	La Belle	- -	19
Wynn Construction Company	P. O. Box 125, Fairchance, Pennsylvania	Laughead	60	- -
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Leisenring #1 Leisenring #2	296 497	- - - -
Fayette Fuel Company	108 North Beeson Avenue, Uniontown, Pennsylvania	Leith	302	- -

DIRECTORY OF BEEHIVE-COKE PLANTS IN THE UNITED STATES THAT PRODUCED COKE IN 1951 - Continued

Operator	Address	Name or location of plant	Number and type of ovens available	
			Machine drawn	Hand drawn
PENNSYLVANIA - Continued		Fayette County - Continued		
King Coal & Coke Company	Brennen Building, Scottdale, Pennsylvania	Lemont #2	300	- -
Ezzi Coal & Coke Company	419 Derrick Avenue, Uniontown, Pennsylvania	Lincoln	300	- -
Lynn Coke Company	117 Church Street, Scottdale, Pennsylvania	Lynn	84	- -
Soberdash Coal & Coke Company	R. D. #1 - Box 84, Connellsville, Pennsylvania	Mahoning	- -	140
Mount Braddock Coke Company	P. O. Box 41, Mount Braddock, Pennsylvania	Mount Braddock	180	- -
Old Home Fuel Company	208 Union Trust Building, Uniontown, Pennsylvania	Old Home	- -	50
Penn-Central Industries, Inc.	P. O. Box 59, Oliver, Pennsylvania	Oliver #1	124	76
Eberly Coal & Coke Company	208 Union Trust Building, Uniontown, Pennsylvania	Oliver #2	350	45
Amore Coal Company	P. O. Box 141, Fairchance, Pennsylvania	Oliver #3	120	- -
Keighley & Kolarik	Oliver, Pennsylvania			
Korona Coal & Coke Company	62 East Main Street, Uniontown, Pennsylvania	Oliver #3	38	- -
Nicholson Coal & Coke Company	P. O. Box 14, Gans, Pennsylvania	Oliver #3	30	- -
Orient-Connellsville Coke Company	P. O. Box 1911, Uniontown, Pennsylvania	Orient	100	140
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Phillips	400	- -
Leckrone Coal & Coke Company	R. D. #1 - Box 16, McClellandtown, Pennsylvania	Puritan #1 & 2	80	34
Pennsylvania Coal Company	305 Union Trust Building, Uniontown, Pennsylvania	Puritan #6 & 7	120	74
Fayette Fuel Company	108 North Beeson Avenue, Uniontown, Pennsylvania	Redstone	142	- -
Revere Coke Corporation	P. O. Box 590, Uniontown, Pennsylvania	Revere	99	- -
S. B. & S. Coal Company, Inc.	74 Morgantown Street, Fairchance, Pennsylvania	Richhill	44	- -
Bortz Coal Company	Union Trust Building, Uniontown, Pennsylvania	Sapper	- -	26
John J. Bobak	R. D. #4 - Box A-133, Uniontown, Pennsylvania	Searights	200	- -
Menallen Coke Company	New Salem, Pennsylvania	Shamrock	210	- -
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Shoaf #1	302	- -
Bortz Coal Company	Union Trust Building, Uniontown, Pennsylvania	Stambaugh	206	- -
Louis E. Genovese Coke Company	P. O. Box 511, Star Junction, Pennsylvania	Star Junction	160	- -
Umbel Coal & Coke Company	R. D. #3 - Box 500-A, Uniontown, Pennsylvania	Star Junction	- -	a/38
Kenliff Coal & Coke Company	306 North Main Street, Masontown, Pennsylvania	Sunshine	220	- -
Hillman Coal & Coke Company	1914 Grant Building, Pittsburgh 19, Pennsylvania	Thompson #2 Tower Hill #2	320 254	- - - -
Fred A. Cuteri	P. O. Box 126, Republic, Pennsylvania	Tower Hill #1	310	- -
King Coal & Coke Company	Brennen Building, Scottdale, Pennsylvania	Trotter	- -	79
Wynn Coal & Coke Company	P. O. Box 125, Fairchance, Pennsylvania	Wynn	170	- -
Galiardi Coal & Coke Company	Second National Bank Building, Connellsville, Pennsylvania	York Run	300	120
		Greene County		
Hillman Coal & Coke Company	1914 Grant Building, Pittsburgh 19, Pennsylvania	Poland	102	- -
		Indiana County		
B. H. S. Coal & Coke Company	Kaufman-Lewine Building, Latrobe, Pennsylvania	Coral	- -	155
H. G. Byrne	Connellsville, Pennsylvania			
Byrne-Davis	R. D. #1, Blairsville, Pennsylvania	Coral	80	- -
Rochester & Pittsburgh Coal Company	655 Church Street, Indiana, Pennsylvania	Ernest	262	- -
Smith-Byrne Company, Inc.	P. O. Box 106, Graceton, Pennsylvania	Graceton	140	- -
		Westmoreland County		
Ardara Coal & Coke Company	P. O. Box 53, Ardara, Pennsylvania	Ardara	- -	58
Atlantic Crushed Coke Company	121 North Main Street, Greensburg, Pennsylvania	Atlantic #2	- -	120
Stewart Coal & Coke Company	116 North Main Street, Greensburg, Pennsylvania	Beatty #2	175	- -

DIRECTORY OF BEEHIVE-COKE PLANTS IN THE UNITED STATES THAT PRODUCED COKE IN 1951 - Continued

Operator	Address	Name or location of plant	Number and type of ovens available	
			Machine drawn	Hand drawn
PENNSYLVANIA - Continued		Westmoreland County - Ctd.		
Rady & Yelinek	P. O. Box 141, Youngwood, Pennsylvania	Brinkerton	35	- -
Brinkerton Coke Company	Calumet, Pennsylvania	Calumet	- -	42
Calumet Fuel Company	Calumet, Pennsylvania	Calumet	- -	44
C. W. Dillon	Calumet, Pennsylvania	Calumet	- -	130
Carpentertown Coal & Coke Company	1100 Union Trust Building, Pittsburgh 19, Pennsylvania	Carpentertown	310	- -
Bortz Coal Company	Union Trust Building, Uniontown, Pennsylvania	Central	204	- -
Karazsia Coal & Coke Company	Crabtree, Pennsylvania	Crabtree	434	- -
Weinman Coal & Coke Company	R. D. #3, Mount Pleasant, Pennsylvania	Donnley	- -	18
Beatty Coal Company	Kaufman-Lewine Building, Latrobe, Pennsylvania	Duquesne	- -	46
Gelet & Grabiak	P. O. Box 138, Wyano, Pennsylvania	Hecla #3	- -	30
Hood Brothers	Calumet, Pennsylvania	Hecla #3	- -	30
Jarry Coal & Coke Company	62 East Main Street, Uniontown, Pennsylvania	Hester	45	- -
Humphrey-Connellsville Coke Company	410 Coulter Building, Greensburg, Pennsylvania	Humphrey	145	- -
Jamison Coal & Coke Company	116 North Main Street, Greensburg, Pennsylvania	Jamison #2	460	- -
Bradish Coal & Coke Company	R. D. #2, Greensburg, Pennsylvania	Jane	- -	20
Klaka Brothers	P. O. Box 86, Mammoth, Pennsylvania	Magee	- -	33
Mammoth Coal & Coke Company	Mammoth, Pennsylvania	Mammoth	259	51
King Brothers Coal & Coke Company	Brennen Building, Scottdale, Pennsylvania	Marguerite	196	19
George K. Brennen	207 Brennen Building, Scottdale, Pennsylvania	Myers	- -	38
John Harhai	R. D. #1, Mount Pleasant, Pennsylvania	Peanut	- -	45
Latrobe Coal & Coke Company	Trust Building, Latrobe, Pennsylvania	Peanut	- -	50
Rosebosky & Novak Manufacturing Company	R. D. #1, Mount Pleasant, Pennsylvania	Peanut	- -	20
Ralph Galetti	R. D. #1, Export, Pennsylvania	Red Shaft	- -	60
Atlantic Crushed Coke Company	121 North Main Street, Greensburg, Pennsylvania	Salem	48	182
Carpentertown Coal & Coke Company	1100 Union Trust Building, Pittsburgh 19, Pennsylvania	Standard	277	- -
Weinman Coal & Coke Company	R. D. #3, Mount Pleasant, Pennsylvania	Star	- -	16
Curtis & Gongo	R. D. #1, Mount Pleasant, Pennsylvania	Trauger	- -	140
Walter Glovola	P. O. Box 52, Trauger, Pennsylvania	Trauger	- -	40
Joseph J. Hacker	Trauger, Pennsylvania	Trauger	- -	120
Kara Coal & Coke Company	R. D. #5, Greensburg, Pennsylvania	Trauger	33	- -
Stanley J. Krofick	R. D. #2 - Box 101-B, Latrobe, Pennsylvania	Trauger	- -	17
A. S. McGiffin	R. D. #1, Mount Pleasant, Pennsylvania	Udell	- -	20
United Coke Company	701 Loucks Avenue, Scottdale, Pennsylvania	United	- -	110
Stewart Coal & Coke Company	116 North Main Street, Greensburg, Pennsylvania	Whitney	100	- -
King Coke Company	Brennen Building, Scottdale, Pennsylvania	Whyel #1	42	- -
Hepler Coal & Coke Company	P. O. Box 95, Madison, Pennsylvania	Whyel #2	- -	35
Losier Brothers Coal Company	R. D. #3 - Box 135, Blairsville, Pennsylvania	Whyel (Ellen #1)	- -	48
C. E. Smith	Lycippus, Pennsylvania	Wilpen	58	22
TENNESSEE				
Coalmont Coal Company	305 James Building, Chattanooga, Tennessee	Coalmont	- -	90
UTAH				
Kaiser Steel Corporation	P. O. Box 217, Fontana, California	Sunnyside	- -	297
VIRGINIA				
Wise Coal & Coke Company	Dorchester, Virginia	Dorchester	170	- -
Christie Coal & Coke Company	Norton, Virginia	Esserville	- -	70
Hawthorne Coke & Fuel Corporation	4011 Carew Tower, Cincinnati, Ohio	Hawthorne	- -	50
Norton Coal Company	Norton, Virginia	Norton	92	- -
Stonega Coke & Coal Company	Big Stone Gap, Virginia	Stonega	167	199

DIRECTORY OF BEEHIVE-COKE PLANTS IN THE UNITED STATES THAT PRODUCED COKE IN 1951 - Continued

Operator	Address	Name or location of plant	Number and type of ovens available	
			Machine drawn	Hand drawn
WEST VIRGINIA				
Wynn Coal & Coke Company	P. O. Box 125, Fairchance, Pennsylvania	Bretz	85	- -
Allied Chemical & Dye Corporation	40 Rector Street, New York 6, New York	Carbondale	- -	102
Preston County Coke Company	Cascade, West Virginia	Cascade	166	28
Donegan Coal & Coke Company	70 Pine Street, New York 5, New York	Fenwick	- -	50
P. & I. Coal & Coke Company	Junior, West Virginia	Gage	- -	60
Allied Chemical & Dye Corporation	40 Rector Street, New York 6, New York	Harewood	83	83
Cornell Coke Company	9 Court Street, Uniontown, Pennsylvania	Rock Forge	- -	132
Babcock Coal & Coke Company	906 Frick Building, Pittsburgh 19, Pennsylvania	Sewell	- -	193

a/ Included with Louis E. Genovese Coke Company after August.

Prepared by Maxine M. Otero, J. A. DeCarlo, and J. A. Corgan, Chief, Anthracite and Coke Sections, under the supervision of T. W. Hunter, Chief, Coal Branch, Fuels and Explosives Division.

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MINERAL MARKET REPORT
M. M. S. NO. 2071

FUEL BRIQUETS AND PACKAGED FUEL IN 1951

Reports received by the Bureau of Mines, United States Department of the Interior, indicate a substantial drop in the production of fuel briquets in 1951, when a total of 2,387,219 net tons, a decrease of about 14 percent from 1950, was reported. Packaged fuel production in 1951 totaled 119,535 tons, a decrease of about 12 percent from 1950.

Twenty-eight plants [1] in 11 States contributed to the 1951 fuel-briquet production, the 20 plants located in the Central States accounting for 61 percent of the total output. Wisconsin, with 10 plants and about 42 percent of the National output, was the largest individual fuel-briquet producing State. West Virginia followed with two plants, and Pennsylvania ranked third with 4 plants operating. Other producing States in order of output were: Missouri, Oregon, Illinois, Indiana, North Dakota, Michigan, Arkansas, and Nebraska.

The total value of the 1951 production of fuel briquets, $27,454,638, reflects a decrease of about 14 percent from the value of $32,039,379, reported for 1950.

Of the total 2,373,548 tons of fuel briquets reported shipped in 1951, about 92 percent was destined to 37 States and the District of Columbia; 77 percent of the total moved by rail and 23 percent, by truck. Exports, virtually all of which were destined for Canada, totaled 168,780 tons [2], and imports, all from Canada, totaled only 123 tons. [2]

Bituminous coal and Pennsylvania anthracite were the principal raw fuels used in the manufacture of fuel briquets in 1951. Asphalt binders were used exclusively in making briquets.

Fifty-three plants [1] in 11 States contributed to the 1951 production of 119,535 tons of packaged fuel, the 51 plants located in the Central States accounting for 99 percent of the total output. Michigan, with 17 plants and about 31 percent of the National output, was the largest individual packaged-fuel producing State. Wisconsin followed with 7 plants, and Ohio was third with 14 plants operating. Other producing States in order of output were: Minnesota, Indiana, Iowa, Nebraska, Virginia, Illinois, Missouri, and Kentucky.

The total value of the 1951 production of packaged fuel, $2,169,539, was a decrease of about 11 percent from the value of $2,430,847, reported for 1950.

Of the total shipments of packaged fuel reported for 1951 (119,840 net tons), 93 percent moved by truck and about 7 percent, by rail; 82 percent was reported as local sales.

Bituminous coal and petroleum coke were the principal raw fuels used in making packaged fuel and both asphalt and starch, together with a small amount of cement, were employed as binders in manufacturing packaged fuel.

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[1] Directories of fuel-briquet and packaged-fuel operations, and a list of manufacturers of briquetting machinery, M.M.S. Nos. 2062, 2063, and 2064, respectively, may be obtained upon request from the U. S. Bureau of Mines, Washington 25, D. C.
[2] Preliminary and subject to revision.

Prepared by Golden V. Chiriaco, under the supervision of J. A. Corgan, Chief, Anthracite and Coke Sections, Coal Branch, T. W. Hunter, Chief.

TABLE 1.--SALIENT STATISTICS OF THE FUEL-BRIQUETTING INDUSTRY IN THE UNITED STATES, 1935-39 (AVERAGE), AND 1947-51

	1935-39 (average)	1947 1/	1948
Production:			
Eastern States ------------- net tons--	285,248	1,089,705	1,151,041
Central States ------------- net tons--	588,573	1,966,834	1,820,074
Pacific Coast States-------- net tons--	75,196	115,057	157,362
Total ------------------------------	949,017	3,171,596	3,128,477
Imports -------------------- net tons--	11,792	387	329
Exports -------------------- net tons--	2/ 18,206	248,760	207,885
Consumption, apparent 3/------ net tons--	942,603	2,923,223	2,920,921
Plants in operation --------------------	32	35	36
Value of production --------------------	$6,083,308	$30,762,253	$36,011,322
Average value per net ton f.o.b. plant:			
Eastern States------------------------	$4.28	$7.82	$9.55
Central States------------------------	$7.08	$10.56	$12.58
Pacific Coast States------------------	$9.23	$12.77	$13.51
World production ------------- net tons--	68,382,000	67,026,000	73,043,000

	1949	1950	1951
Production:			
Eastern States------------- net tons--	674,938	934,635	796,359
Central States------------- net tons--	1,557,819	1,691,914	1,464,185
Pacific Coast States-------- net tons--	171,214	143,471	126,675
Total-------------------------------	2,403,971	2,770,020	2,387,219
Imports -------------------- net tons--	365	804	4/ 123
Exports -------------------- net tons--	167,140	175,768	4/ 168,780
Consumption, apparent 3/------ net tons--	2,237,196	2,595,056	2,218,562
Plants in operation --------------------	33	31	28
Value of production --------------------	$28,641,424	$32,039,379	$27,454,638
Average value per net ton f.o.b. plant:			
Eastern States -----------------------	$9.65	$9.50	$9.79
Central States -----------------------	$12.59	$12.46	$12.31
Pacific Coast States -----------------	$14.67	$14.49	$12.90
World production ------------- net tons--	63,929,000	66,300,000	5/

1/ Peak year of United States fuel-briquet production.
2/ 1937-39 average. Not reported separately prior to 1937.
3/ Production plus imports minus exports.
4/ Preliminary and subject to revision.
5/ Not yet available. Will be published in Minerals Yearbook 1951.

TABLE 2.--PRODUCTION OF FUEL BRIQUETS IN THE UNITED STATES, 1950-51

	1950			1951				
	Plants	Net tons	Value	Plants	Net tons	Value	Percent of change from 1950 in-- Tonnage	Percent of change from 1950 in-- Value
Eastern States ---------	6	934,635	$ 8,880,434	6	796,359	$ 7,795,910	-14.8%	-12.2%
Central States ---------	22	1,691,914	21,080,670	20	1,464,185	18,024,459	-13.5%	-14.5%
Pacific Coast States----	3	143,471	2,078,275	2	126,675	1,634,269	-11.7%	-21.4%
Total -------------	31	2,770,020	32,039,379	28	2,387,219	27,454,638	-13.8%	-14.3%

TABLE 3.--RAW FUELS USED IN MAKING FUEL BRIQUETS IN THE UNITED STATES, 1951

Type of raw fuel used	Plants using	Net tons used
Pennsylvania anthracite--	13	507,687
Arkansas hard coals------	4	56,865
Bituminous low-volatile coal------------------	17	1,255,317
Bituminous high-volatile coal------------------	4	114,257
Semicoke (lignite char)--	1	35,826
Residual carbon from manufacture of oil gas-	2	126,675
Petroleum coke-----------	4	144,050
Total -------------	1/ 28	2,240,677

Source of raw fuel used	Plants using	Net tons used: Yard screenings	Net tons used: Other raw fuels	Net tons used: Total
Yard screenings exclusively (from own or other yards)---------	4	60,814	---------	60,814
Raw fuels (other than yard screenings) exclusively-----------	16	---------	1,207,458	1,207,458
Both yard screenings and other raw fuels--	8	271,699	700,706	972,405
Total -----------	28	332,513	1,908,164	2,240,677

1/ A number of plants used more than one kind of raw fuel; hence, the sum of the plants is greater than the actual number of Plants active (28) in 1951.

TABLE 4.--SHIPMENTS OF FUEL BRIQUETS OF DOMESTIC MANUFACTURE IN THE UNITED STATES, BY STATES OF DESTINATION, AS REPORTED BY PRODUCERS, 1950-51, IN NET TONS

State of destination	1950	1951	State of destination	1950	1951
Arkansas	1,941	2,775	Nebraska	36,223	21,778
California	20,796	1,314	New Hampshire	3,292	3,007
Connecticut	2,623	2,099	New Jersey	13,242	25,260
Delaware	319	162	New York	23,076	17,441
District of Columbia	2,509	1,786	North Carolina	29,691	22,266
Florida	379	227	North Dakota	126,927	95,423
Georgia	51	-------	Ohio	89,086	78,319
Idaho	149	-------	Oklahoma	-------	52
Illinois	167,509	173,191	Oregon	69,190	59,904
Indiana	120,003	116,672	Pennsylvania	39,279	26,778
Iowa	89,500	71,256	Rhode Island	1,964	1,369
Kansas	15,615	7,587	South Carolina	6,821	2,784
Kentucky	8,413	5,718	South Dakota	101,273	86,394
Maine	6,345	6,070	Tennessee	3,459	2,757
Maryland	22,117	17,163	Texas	-------	109
Massachusetts	19,306	27,074	Vermont	2,401	2,194
Michigan	278,841	219,939	Virginia	36,310	30,428
Minnesota	378,996	312,851	Washington	30,477	17,628
Missouri	291,946	271,957	West Virginia	2,495	2,070
Montana	35	-------	Wisconsin	521,112	440,797
			Total	2,563,711	2,174,599

TABLE 5.--SALIENT STATISTICS OF THE PACKAGED-FUEL INDUSTRY IN THE UNITED STATES 1935-39 (AVERAGE), 1940, AND 1947-51

	1935-39 (average)	1940 (peak production year)	1947	1948	1949	1950	1951
Production:							
Eastern States-net tons	5,052	6,349	2,153	1,859	) 125,948	135,682	119,535
Central States-net tons	116,218	276,994	180,728	155,154	)		
Pacific Coast States-net tons	1,563	1,170	--------	--------	--------	--------	--------
Total--net tons	122,833	284,513	182,881	157,013	125,948	135,682	119,535
Plants in operation	63	106	62	62	57	54	53
Value of production	$1,050,566	$2,391,922	$2,882,105	$2,735,861	$2,236,748	$2,430,847	$2,169,539
Average value per net ton f.o.b. plant:							
Eastern States	$9.45	$9.02	$16.58	$17.64	$17.77	$17.19	$18.08
Central States	$8.50	$8.36	$15.75	$17.42	$17.76	$17.92	$18.15
Pacific Coast States	$9.91	$12.82	-------	-------	-------	-------	-------

TABLE 6.--RAW FUELS USED IN MAKING PACKAGED FUEL IN THE UNITED STATES, 1951

Type of raw fuel used	Plants using	Net tons used
Bituminous low-volatile coal	48	100,937
Bituminous high-volatile coal	4	3,946
Pennsylvania anthracite	------	-------
Semianthracite	2	2,695
Petroleum coke	5	9,253
Total	1/ 53	116,831

Source of raw fuel used	Plants using	Net tons used: Yard Screenings	Net tons used: Other raw fuels	Net tons used: Total
Yard screenings exclusively (from own or other yards)	30	24,938	-------	24,938
Raw fuels (other than yard screenings) exclusively	10	------	39,471	39,471
Both yard screenings and other raw fuels	13	19,435	32,987	52,422
Total	53	44,373	72,458	116,831

1/ A number of plants used more than one kind of raw fuel; hence, the sum of the plants above is greater than the actual number of plants active (53) in 1951.

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MINERAL MARKET REPORT
M. M. S. NO. 2072

DIRECTORY OF PEAT PRODUCERS IN THE UNITED STATES WHO REPORTED PRODUCTION OR SALES IN 1951

State	Name and Mailing Address of Plant	Location of Operation	
		County	Nearest Town
CALIFORNIA:	R. W. McClellan and Sons 151 Commercial Way Costa Mesa, California	Orange	Costa Mesa
	Modoc Peat Moss Company 604 Mission Street San Francisco 5, California	Modoc	Likely
	Peat Sales Company 17581 Gothard Road Huntington Beach, California	Orange	Huntington Beach
	Price's Peat Humus Company Huntington Beach, California	Orange	Huntington Beach
COLORADO:	McCoy & Jensen Morrison, Colorado	Boulder	Nederland
CONNECTICUT:	J. Werden Clark Old Saybrook, Connecticut	Middlesex	Old Saybrook
	Peat Humus Associates, Inc. 884 Neipsic Road Glastonbury, Connecticut	Hartford	Glastonbury
	Shaler Humus 352 Woodland Street Manchester, Connecticut	Hartford	East Hartford

Prepared by Golden V. Chiriaco, under the supervision of J. A. Corgan, Chief, Anthracite and Coke Sections, Coal Branch, T. W. Hunter, Chief.

DIRECTORY OF PEAT PRODUCERS IN THE UNITED STATES WHO REPORTED PRODUCTION OR SALES IN 1951
(Continued)

State	Name and Mailing Address of Plant	Location of Operation	
		County	Nearest Town
FLORIDA:	Agricultural Organics Corporation Seffner, Florida	Hillsborough	Seffner
	Daetwyler Peat Mine Route 7, Box 134F Orlando, Florida	Orange	Orlando
	Florida Nursery & Landscape Company Box 97 Leesburg, Florida	Lake	Leesburg
	Glen Saint Mary Nurseries Company Glen St. Mary, Florida	Putnam	Florahome
	Jack O. Holmes, Inc. Post Office Box 417 Tampa, Florida	Hillsborough	Tampa
	Mulford-Hickerson Peat Humus Corp. Apopka, Florida	Orange	Apopka
	Southern States Nurseries, Inc. Macclenny, Florida	Putnam	Florahome
	West Florida Humus Company Box 1196 Panama City, Florida	Bay	Panama City
GEORGIA:	Georgia Peat Moss Company, Inc. J. Nickles Canton, Ohio	Lowndes	Lake Park
ILLINOIS:	Manito Filler Company 806 Lehmann Building Peoria 2, Illinois	Tazewell	Manito
INDIANA:	Thurl Ballard Route 2 Warren, Indiana	Wells	Warren
	John Beaver William Graves, Lessee Montpelier, Indiana	Wells	Warren

DIRECTORY OF PEAT PRODUCERS IN THE UNITED STATES WHO REPORTED PRODUCTION OR SALES IN 1951
(Continued)

State	Name and Mailing Address of Plant	Location of Operation	
		County	Nearest Town
INDIANA: (Continued)	Dausman's Oak Grove Peat Moss Rural Route 2 Leesburg, Indiana	Kosciusko	Leesburg
	Glacier Peat Moss Company Rural Route 1 Jonesboro, Indiana	Grant	Jonesboro
	Humus Peat Moss Company Corunna, Indiana	DeKalb	Corunna
IOWA:	Eli Colby Company Hanlontown, Iowa	Worth	Hanlontown
	Colby Pioneer Peat Company Hanlontown, Iowa	Worth	Hanlontown
MAINE:	American Peat Company, Inc. 913 Newark Avenue Elizabeth, New Jersey	Hancock and Washington	Deblois
	Domestic Peat Company 100 Middlesex Street Lowell, Massachusetts	Washington	Centerville
	The Richland Peat Mines, Inc. 198 Lisbon Street Lewiston, Maine	Hancock	North Penobscot
MASSACHUSETTS:	Hinsdale Leafmold Co., Inc. 410 Asylum Street Hartford, Connecticut	Berkshire	Hinsdale
	Roselli Brothers Farms 92 Southampton Road Westfield, Massachusetts	Hampden	Westfield
MICHIGAN:	Bud Green's Genuine Peat Moss 726 Stockbridge Avenue Kalamazoo, Michigan	Kalamazoo	Kalamazoo
	Green Thumb Peat Humus Company Capac, Michigan	St. Clair and Lapeer	Capac

DIRECTORY OF PEAT PRODUCERS IN THE UNITED STATES WHO REPORTED PRODUCTION OR SALES IN 1951

State	Name and Mailing Address of Plant	Location of Operation	
		County	Nearest Town
MICHIGAN: (Continued)	Michigan Peat, Inc. 267 Fifth Avenue New York 16, New York	Lapeer	Capac
	Perry Peat Company, Inc. Box 667 Morrice, Michigan	Shiawassee	Morrice
	Irving L. Pratt & Son Scottville, Michigan	Mason	Scottville
NEW JERSEY:	Hyper-Humus Company Newton, New Jersey	Sussex	Newton
	Edwin Jennings Organics Company P. O. Box 16 Buena, New Jersey	Cumberland	Port Norris
	Netcong Natural Products Company Netcong, New Jersey	Morris	Netcong
OHIO:	Beaver Peat Products Company Damascus, Ohio	Mahoning	Damascus
	H. W. Codding & Sons 1893 Ford Avenue Akron 5, Ohio	Summit	Copley
	Ozmun A. Laven 1127 Victoria Street South Bend, Indiana	Wyandot and Seneca	Carey
	Organic Products Company P. O. Box 155 Carey, Ohio	Seneca	Carey
	F. J. Saylor Rural Delivery 2 North Canton, Ohio	Stark	North Canton
PENNSYLVANIA:	D. M. Boyd New Wilmington, Pennsylvania	Lawrence	Leesburg
	Arthur Minshull Rural Delivery 2 Jackson Center, Pennsylvania	Mercer	Jackson Center

DIRECTORY OF PEAT PRODUCERS IN THE UNITED STATES
WHO REPORTED PRODUCTION OR SALES IN 1951
(Continued)

State	Name and Mailing Address of Plant	Location of Operation	
		County	Nearest Town
PENNSYLVANIA: (Continued)	Moore's Humus Company New Wilmington, Pennsylvania	Lawrence	New Castle
TEXAS:	Lone Star Peat Company Lexington, Texas	Lee	Lexington
WASHINGTON:	Argus Super Humus 15045 First Avenue, N. E. Seattle, Washington	King	Seattle
	Arrow Lake Humus Company 19661 First Avenue, South Seattle, Washington	King	Seattle
	Black Gold Humus Company 15024 First Avenue, N. E. Seattle, Washington	King	Seattle
	T. M. Boehmer Darrington, Washington	Snohomish	Darrington
	Fred and Ted Boysen 18118 Pacific Highway South Seattle, Washington	King	Seattle
	Eric E. Carlson Route 1, Box 1961 Redmond, Washington	King	Redmond
	Evergreen Garden & Landscape Material 17050 Brookside Boulevard Seattle, Washington	Snohomish	Seattle
	Fuller's Soils 17002 Meridian Avenue Seattle 33, Washington	King	Seattle
	Mt. View Humus Company 11041 - 28th Avenue, S. W. Seattle, Washington	King	Seattle
	Parkland Peat Farm 1801 South 112th Street Tacoma, Washington	Pierce	Tacoma

DIRECTORY OF PEAT PRODUCERS IN THE UNITED STATES WHO REPORTED PRODUCTION OR SALES IN 1951
(Continued)

State	Name and Mailing Address of Plant	Location of Operation	
		County	Nearest Town
WASHINGTON: (Continued)	Peninsula Peat Producers, Inc. P. O. Box 226 Tacoma, Washington	Mason	Tahuya
	Hank Peterson's Peat Company Route 10, Box 863 Olympia, Washington	Thurston	Olympia
	Plant Food Company 2303 North 175th Street Seattle, Washington	King	Seattle
	Saltere Peat Meadows Greenacres, Washington	Spokane	Greenacres
	Seola Humus Company 7335 - 34th Avenue, S. W. Seattle 6, Washington	King	Seattle
WISCONSIN:	Tardif Domestic Peat Sales Company 317 East Newhall Avenue Waukesha, Wisconsin	Waukesha	Waukesha

Interior—Duplicating Section, Washington, D. C.

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Oscar L. Chapman, Secretary J. J. Forbes, Director

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Mineral Market Report
MMS No. 2073

ANTIMONY IN 1951

The world production of antimony in 1951 is estimated at about 65,000 metric tons, compared with 50,000 tons in 1950, exceeding the 1942-46 average (40,860) by 59 percent, according to the Bureau of Mines, United States Department of the Interior.

Total domestic consumption of primary antimony increased 13 percent in 1951 over 1950. The yearly American Metal Market average price for antimony in 1951 was 44.166¢ compared with 29.406¢ in 1950.

The new supply of primary antimony in 1951, in terms of recoverable metal was 20,503 short tons. A breakdown of this supply shows that domestic antimony ores contributed 3,267 tons; domestic and foreign lead-silver ores, 2,356 tons and imports 14,880 tons. The antimony imported arrived as follows: Ores and concentrates 10,953 tons; metal, 2,231; needle 4; and antimony oxide 1,692. Production of secondary antimony amounted to 23,159 tons which, when added to the 20,503 tons of primary antimony from all sources, provided a total available supply of 43,662 tons in 1951, compared with 41,583 tons in 1950 and 30,008 tons in 1949.

Table 1.-Salient statistics for antimony in the United States 1942-46 (average) and 1947-51, short tons

	1942-46 average	1947	1948	1949	1950	1951
Production:						
Primary (antimony content):						
Mine........................	3,534	5,316	6,489	1,636	2,497	3,551
Smelter.....................	14,816	13,782	14,308	8,099	9,471	12,228
Secondary (antimony content)...	17,166	22,984	21,592	18,061	18,412	23,159
Imports for consumption..........	20,084	15,153	17,198	9,463	15,538	16,181
Antimony in ore................	19,065	9,257	13,464	7,473	9,746	11,905
Needle......................	105	17	533	81	19	6
Metal.......................	914	5,879	3,201	1,853	4,632	2,231
Oxide.......................	1/	-	-	56	1,160	2,039
Exports of ore and metal.........	568	808	327	485	154	168
Consumption of primary antimony 2/	22,078	16,647	15,455	11,530	15,494	17,519
Average price of antimony at New York 3/................	16.09	33.45	36.67	38.73	29.41	44.166
World production 4/ metric tons..	40,860	38,000	45,000	37,000	50,000	5/65,000

1/ Figures not available 42-43. None imported 44-48.
2/ Antimony contained in domestic and foreign silver-lead ores, recovered at primary lead refineries and marketed chiefly in antimonial lead, not included.
3/ American Metal Market.
4/ Exclusive of U.S.S.R.
5/ Estimated.

Consumption of antimony (primary and secondary) was 40,678 tons, compared with 37,356 tons in 1950 and 29,591 in 1949.

Domestic primary antimony smelters produced metal, oxide and sulfide containing a total of 12,228 tons of antimony from domestic and foreign ores, an increase of 29 percent over 1950.

Antimonial lead produced at primary lead refineries contained 4,416 tons of antimony, a decrease of 2 percent under the 4,504 tons contained in 1950. Gross weight of antimonial lead produced at primary lead refineries in 1951 was 65,309 tons, compared with 61,912 tons in 1950.

Production of domestic antimony ores and concentrates totalled 10,569 tons, containing 3,551 tons of antimony of which 3,267 tons were estimated as recoverable. Most of this material was from low grade stibnite produced by the Bradley Mining Co., at the Yellow Pine mine and treated at its mill and smelter at Stibnite, Idaho. Other producers of domestic ores and concentrates included the Hermada Mining Company of Idaho, GOP Antimony, Inc. in Washington, G. A. Peterson, John Heizer and Phil Cox in Nevada.

In Alaska Earl Pilgrim operated the Stampede mine in the Kantishna District. The bulk of the antimony mined in Alaska in 1951 came from operations conducted by Alamco, Inc., from the Sawtooth claims (Sawtooth Mining Company ground), and from the Tok property of Sam Gamblin.

Table 2.-Antimony-bearing ores and concentrates produced in the United States 1/ 1942-46 (average) and 1947-51, short tons

Year	Gross Weight	Antimony content		Year	Gross Weight	Average content	
		Quantity	Average Percent			Quantity	Average Percent
1942-46 (average)...	13,239	3,534	26.7	1949..........	5,260	1,636	31.1
1947...............	20,020	5,316	26.6	1950..........	6,888	2,497	36.3
1948...............	16,239	6,489	40.0	1951..........	10,569	3,551	33.6

1/ Includes Alaska.

At the close of 1951, industry stocks of antimony were 11 percent higher than the 8,189 tons reported at the end of 1950. Mine stocks at the beginning and end of 1951 were 626 tons and 479 tons respectively. Other industry stocks were 7,563 tons at the end of 1950 and 8,612 tons on December 31, 1951.

Table 3.-Industry stocks of antimony in the United States at end of year 1950-51, in short tons of contained antimony

Raw material	December 31, 1950			December 31, 1951		
	Mine	Other	Total	Mine	Other	Total
Ore and concentrates..........................	626	3,493	4,119	479	3,257	3,736
Metallic antimony............................	-	1,838	1,888	-	2,574	2,574
Antimony oxide...............................	-	1,989	1,989	-	2,672	2,672
Antimony sulfide(needle).....................	-	193	193	-	109	109
Total...............................	626	7,563	8,189	479	8,612	9,091

Imports of antimony ore were principally from Bolivia, Mexico, Union of South Africa and Canada with Chile, Peru, Mozambique, French Morocco, France, Greece and Honduras contributing in descending order. Imports of metal were chiefly from Mexico, Belgium-Luxembourg, Yugoslavia, France and United Kingdom, with smaller quantities from Canada, Netherlands, Czechoslovakia, Italy and Spain. In addition, 2,039 tons of antimony oxide were imported, the bulk of it from the United Kingdom and Belgium-Luxembourg.

Table 4.-Antimony imported for consumption in the United States
1942-46(average) and 1947-51 1/
(U. S. Department of Commerce)

	Ore			Needle		Metal		Oxide		Type metal and Anti-monial lead 2/
		Antimony content								
	Short Tons	Short Tons	Value	Short Tons	Value	Short Tons	Value	Short Tons	Value	
1942-46 average.	44,845	19,065	$3,598,941	105	$20,267	914	$ 281,749	3/	$ -	466
1947....	28,471	9,257	2,672,249	17	7,914	5,879	3,487,126	-	-	187
1948....	41,610	13,464	4,312,431	533	314,809	3,201	2,022,676	-	-	1,569
1949....	17,855	7,473	2,488,271	81	42,537	1,853	1,242,582	56	27,290	654
1950....	22,307	9,746	1,850,162	19	8,895	4,632	2,204,091	1,160	423,386	4/1,936
1951....	27,354	11,905	4,621,437	6	5,936	2,231	1,780,576	2,039	1,525,016	676

1/ Does not include antimony contained in lead-silver ores.
2/ Estimated antimony content, short tons.
3/ Figures not available 42-43. None imported 44-48.
4/ Revised.

Gross weight of exports of antimony ore and metal in 1951 amounted to 168 short tons valued at $151,123.

Table 5.-Industrial consumption of primary antimony 1947-51, short tons

	1947	1948	1949	1950	1951
Metal products:					
Alloys 1/	-	-	-	-	15
Ammunition	24	21	6	9	4
Antimonial lead	6,172	6,024	4,737	4,912	2,431
Battery metal 1/	-	-	-	-	2,774
Bearing metal and bearings	2,056	1,803	873	3,256	1,308
Cable covering	61	62	172	72	95
Castings	129	81	49	126	79
Collapsible tubes and foil	77	31	14	23	18
Galvanizing 1/	-	-	-	-	11
Sheet and pipe	225	195	306	300	180
Solder	132	145	155	162	123
Type metal	1,216	1,019	587	766	709
Other 1/	-	-	-	-	26
Total metal products	10,092	9,381	6,899	9,626	7,773
Nonmetal products:					
Ammunition primers	16	6	9	9	18
Antimony sulfide(Precipitated)2/	-	-	-	-	68
Antimony trichloride	3/	3/	3/	3/	3/
Fireworks 4/	-	-	-	-	20
Flameproof coatings and compounds 4/	-	-	-	-	463
Flameproofed textiles	205	388	273	369	2,590
Frits and ceramic enamels	1,754	1,561	1,155	1,462	1,476
Glass and pottery	421	352	296	579	570
Matches	23	37	28	56	31
Paints and lacquers	1,324	1,288	874	267	962
Pigments 4/	-	-	-	-	705
Plastics	156	228	498	737	747
Rubber Products	39	41	55	103	19
Sodium antimonate	3/	3/	3/	3/	3/
Toy Caps 4/	-	-	-	-	24
Other	2,617	2,173	1,443	2,286	2,053
Total nonmetal products	6,555	6,074	4,631	5,868	9,746
Grand total	16,647	15,455	11,530	15,494	17,519

1/ Included with "Antimonial lead" in previous years.
2/ Not previously reported.
3/ Combined with "Other". Bureau of Mines not at liberty to publish separate figures.
4/ Included with "Other" in previous years.

Prepared by Abbott Renick and E. Virginia Wright, under the supervision of C. H. Johnson, Chief, Base Metals Branch, May 15, 1952

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary
J. J. FORBES, Director

May 19, 1952

MINERAL MARKET REPORT
M.M.S. NO. 2074

DIRECTORY OF OVEN-COKE PLANTS IN THE UNITED STATES, DECEMBER 31, 1951

Operator	Address	Location of plant	Number and type of ovens
ALABAMA			
Alabama Byproducts Corporation	P. O. Box 354, Birmingham 1, Alabama	Tarrant	100 Koppers 103 Koppers-Becker
DeBardeleben Coal Corporation	1006 Transportation Building, Birmingham 3, Alabama	Holt	60 Semet-Solvay
Republic Steel Corporation	Republic Building, Cleveland 1, Ohio	Gadsden	37 Koppers 65 Wilputte
		Thomas	57 Koppers-Becker 65 Koppers-Becker a/
Sloss-Sheffield Steel & Iron Company	3131 First Avenue, North, Birmingham 2, Alabama	Birmingham	120 Semet-Solvay 30 Koppers-Becker a/
United States Steel Company Tennessee Coal & Iron Division	P. O. Box 599, Fairfield, Alabama	Fairfield	154 Koppers 418 Koppers-Becker
Woodward Iron Company	Woodward, Alabama	Woodward	226 Koppers 30 Koppers-Becker a/
CALIFORNIA			
Kaiser Steel Corporation	P. O. Box 217, Fontana, California	Fontana	135 Koppers-Becker
COLORADO			
Colorado Fuel & Iron Corporation	P. O. Box 316, Pueblo, Colorado	Pueblo	120 Koppers 146 Koppers-Becker
CONNECTICUT			
Connecticut Coke Company	P. O. Box 1820, New Haven 8, Connecticut	New Haven	70 Koppers-Becker
ILLINOIS			
General Motors Corporation	General Motors Building, Detroit 2, Michigan	Waukegan	31 Koppers-Becker
Granite City Steel Company	P. O. Box 367, Granite City, Illinois	Granite City	49 Koppers-Becker 27 Koppers-Becker a/
Interlake Iron Corporation	1900 Union Commerce Building, Cleveland 14, Ohio	Chicago	120 Semet-Solvay
International Harvester Company Wisconsin Steel Division	180 North Michigan Avenue, Chicago 17, Illinois	South Chicago	45 Koppers-Becker 88 Wilputte 15 Wilputte a/
The Peoples Gas Light & Coke Company	122 South Michigan Avenue, Chicago 3, Illinois	Chicago	91 Koppers 51 Koppers-Becker
Republic Steel Corporation	Republic Building, Cleveland 1, Ohio	Chicago	75 Wilputte
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Joliet	280 Koppers
The Youngstown Sheet & Tube Company	Stambaugh Building, Youngstown 1, Ohio	South Chicago	70 Koppers-Becker
INDIANA			
Citizens Gas & Coke Utility	49 South Pennsylvania Street, Indianapolis 9, Indiana	Indianapolis	41 Koppers-Becker 41 Semet-Solvay 127 Wilputte
Indiana Gas & Chemical Corporation	13th & Hulman Streets, Terre Haute, Indiana	Terre Haute	60 Koppers
Inland Steel Company	38 South Dearborn Street, Chicago 3, Illinois	Indiana Harbor	418 Koppers-Becker
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Gary	280 Koppers 357 Koppers-Becker 511 Wilputte
The Youngstown Sheet & Tube Company	Stambaugh Building, Youngstown 1, Ohio	Indiana Harbor	120 Semet-Solvay 75 Koppers-Becker a/
KENTUCKY			
Allied Chemical & Dye Corporation Semet-Solvay Division	40 Rector Street, New York 6, New York	Ashland	120 Semet-Solvay 76 Wilputte a/
MARYLAND			
Bethlehem Steel Company	Bethlehem, Pennsylvania	Sparrows Point	240 Koppers 311 Koppers-Becker 65 Koppers-Becker a/

a/ Under construction.

DIRECTORY OF OVEN-COKE PLANTS IN THE UNITED STATES, DECEMBER 31, 1951 (Continued)

Operator	Address	Location of plant	Number and type of ovens
MASSACHUSETTS			
Eastern Gas & Fuel Associates	250 Stuart Street, Boston 16, Massachusetts	Everett	149 Koppers-Becker 55 Wilputte
MICHIGAN			
Allied Chemical & Dye Corporation Semet-Solvay Division	40 Rector Street, New York 6, New York	Detroit	216 Semet-Solvay
Ford Motor Company	3000 Schaefer Road, Dearborn, Michigan	Rouge	183 Koppers-Becker 37 Koppers-Becker a/
Great Lakes Steel Corporation	Ecorse 29, Michigan	Zug Island	146 Semet-Solvay 70 Wilputte a/
Wyandotte Chemicals Corporation	Wyandotte, Michigan	Wyandotte	39 Koppers-Becker
MINNESOTA			
Interlake Iron Corporation	1900 Union Commerce Building, Cleveland 14, Ohio	West Duluth	41 Koppers-Becker 20 Wilputte
Koppers Company, Incorporated	Koppers Building, Pittsburgh 19, Pennsylvania	St. Paul	65 Koppers
United States Steel Company American Steel & Wire Division	525 William Penn Place, Pittsburgh 30, Pennsylvania	Duluth	57 Koppers 57 Koppers-Becker 58 Koppers-Becker a/
MISSOURI			
Great Lakes Carbon Corporation	18 East 48th Street, New York 17, New York	St. Louis	56 Koppers 40 Simon-Carves a/
NEW JERSEY			
Koppers Company, Incorporated	Koppers Building, Pittsburgh 19, Pennsylvania	Kearny	165 Koppers 65 Koppers-Becker
Public Service Electric & Gas Company	80 Park Place, Newark 1, New Jersey	Camden	111 Koppers-Becker
NEW YORK			
Allied Chemical & Dye Corporation Semet-Solvay Division	40 Rector Street, New York 6, New York	Buffalo	120 Semet-Solvay
Bethlehem Steel Company	Bethlehem, Pennsylvania	Lackawanna	171 Koppers Becker 60 Semet-Solvay 152 Wilputte 76 Wilputte a/
Brooklyn Union Gas Company	176 Remsen Street, Brooklyn 2, New York	Greenpoint	90 Koppers-Becker
Consolidated Edison Company of New York	4 Irving Place, New York 3, New York	Hunts Point	111 Koppers-Becker
Donner-Hanna Coke Corporation	Box A, South Park Station, Buffalo 20, New York	Buffalo	186 Koppers 66 Koppers-Becker
Republic Steel Corporation	Republic Building, Cleveland 1, Ohio	Troy	31 Koppers-Becker 31 American Foundation
Rochester Gas & Electric Corporation	89 East Avenue, Rochester 4, New York	Rochester	97 Koppers-Becker
OHIO			
Allied Chemical & Dye Corporation Semet-Solvay Division	40 Rector Street, New York 6, New York	Ironton	93 Semet-Solvay 76 Wilputte
Armco Steel Corporation	703 Curtis Street, Middletown, Ohio	Hamilton	110 Koppers-Becker
		Middletown	76 Wilputte a/
Detroit Steel Corporation	Detroit, Michigan	Portsmouth	108 Semet-Solvay
Diamond Alkali Company	300 Union Commerce Building, Cleveland 14, Ohio	Painesville	46 Koppers-Becker
Interlake Iron Corporation	1900 Union Commerce Building, Cleveland 14, Ohio	Toledo	94 Koppers 57 Wilputte a/
Jones & Laughlin Steel Corporation	Third Avenue & Ross Street, Pittsburgh 30, Pennsylvania	Cleveland	100 Semet-Solvay
Republic Steel Corporation	Republic Building, Cleveland 1, Ohio	Canton	62 Koppers
		Cleveland	204 Koppers 75 Koppers-Becker 126 Koppers-Becker a/
		Massillon	49 Koppers-Becker
		Warren	80 Koppers 61 Wilputte
		Youngstown	103 Koppers 69 Koppers-Becker
United States Steel Company American Steel & Wire Division	525 William Penn Place, Pittsburgh 30, Pennsylvania	Cleveland	180 Koppers
United States Steel Company National Tube Division	525 William Penn Place, Pittsburgh 30, Pennsylvania	Lorain	208 Koppers 177 Wilputte
The Youngstown Sheet & Tube Company	Stambaugh Building, Youngstown 1, Ohio	Campbell	306 Koppers
		Youngstown	84 Koppers

a/ Under construction.

DIRECTORY OF OVEN-COKE PLANTS IN THE UNITED STATES, DECEMBER 31, 1951 (Continued)

Operator	Address	Location of plant	Number and type of ovens
PENNSYLVANIA			
Alan Wood Steel Company	Conshohocken, Pennsylvania	Swedeland	110 Koppers
			41 Koppers-Becker
Bethlehem Steel Company	Bethlehem, Pennsylvania	Bethlehem	212 Koppers
			204 Koppers-Becker
		Johnstown	77 Koppers-Becker
			88 Semet-Solvay
			74 Wilputte
			120 Cambria
			77 Wilputte a/
		Steelton	60 Koppers
			70 Koppers-Becker
Crucible Steel Company of America	405 Lexington Avenue, New York 17, New York	Midland	100 Koppers
			84 Koppers-Becker
			29 Koppers a/
Interlake Iron Corporation	1900 Union Commerce Building, Cleveland 14, Ohio	Erie	35 Wilputte
			23 Wilputte a/
Jones & Laughlin Steel Corporation	Third Avenue & Ross Street, Pittsburgh 30, Pennsylvania	Aliquippa	352 Koppers-Becker
		Pittsburgh	300 Koppers
			60 Wilputte
Philadelphia Coke Company	4501 Richmond Street, Philadelphia 37, Pennsylvania	Philadelphia	74 Koppers-Becker
Philadelphia Electric Company	1000 Chestnut Street, Philadelphia 5, Pennsylvania	Chester	25 Koppers-Becker
Pittsburgh Coke & Chemical Company	P. O. Box 1645, Pittsburgh 30, Pennsylvania	Neville Island	105 Koppers-Becker
			35 Koppers-Becker a/
Pittsburgh Steel Company	1600 Grant Building, Pittsburgh 19, Pennsylvania	Monessen	74 Koppers-Becker
United States Steel Company	525 William Penn Place, Pittsburgh 30, Pennsylvania	Clairton	853 Koppers
			470 Koppers-Becker
			122 Wilputte
			122 Koppers-Becker a/
		Morrisville	174 Wilputte a/
RHODE ISLAND			
Providence Gas Company	100 Weybosset Street, Providence 1, Rhode Island	Providence	40 Koppers
			25 Koppers-Becker
TENNESSEE			
Tennessee Products & Chemical Corporation ..	American National Bank Building, Nashville 3, Tennessee	Alton Park	24 Semet-Solvay
			20 Wilputte
TEXAS			
Lone Star Steel Company	P. O. Box 8087, Dallas 5, Texas	Daingerfield	78 Koppers-Becker
Sheffield Steel Corporation	Sheffield Station, Kansas City, Missouri	Houston	47 Koppers-Becker
UTAH			
United States Steel Company .... Columbia-Geneva Steel Division	P. O. Box 269, Salt Lake City 10, Utah	Geneva	252 Koppers-Becker
		Ironton	56 Koppers-Becker
WEST VIRGINIA			
E. I. du Pont de Nemours & Company	Du Pont Building, Wilmington 98, Delaware	Belle	71 Wilputte
Sharon Steel Corporation	Drawer 537, Sharon, Pennsylvania	Fairmont	60 Koppers
		Morgantown b/	74 Wilputte
Weirton Steel Company	Weirton, West Virginia	Weirton	249 Koppers-Becker
Wheeling Steel Corporation	Market Street, Wheeling, West Virginia	East Steubenville	94 Koppers
			157 Koppers-Becker
			63 Koppers-Becker a/
WISCONSIN			
Milwaukee Solvay Coke Company	626 East Wisconsin Avenue, Milwaukee 1, Wisconsin	Milwaukee	100 Koppers
			100 Semet-Solvay

a/ Under construction. b/ Now Mathieson Chemical Corporation, Baltimore, Maryland.

DIRECTORY OF MEDIUM AND LOW TEMPERATURE CARBONIZATION PLANTS IN THE UNITED STATES, DECEMBER 31, 1951

Operator	Address	Location of plant	Type of carbonizing equipment and number of units
NORTH DAKOTA			
Dakota Briquets & Tar Products, Inc.	Dickinson, North Dakota	Dickinson	2 Lurgi retorts
PENNSYLVANIA			
Pittsburgh Consolidation Coal Company ...... Disco Company Division	P. O. Box 7994, Pittsburgh 16, Pennsylvania	Champion	7 Disco retorts
UTAH			
Records Coal Processing Corporation	P. O. Box 328, Price, Utah	Wellington a/	8 Retorts
WASHINGTON			
Wilkeson Products Company	1220 St. Paul Avenue, Tacoma 2, Washington	Tacoma b/	17 Curran-Knowles

a/ No commercial production in 1951. b/ Not in operation in 1951.

Prepared by Maxine M. Otero, J. A. DeCarlo, and J. A. Corgan, Chief, Anthracite and Coke Sections, under the supervision of T. W. Hunter, Chief, Coal Branch, Fuels and Explosives Division.

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UNITED STATES DEPARTMENT OF THE INTERIOR

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FOR RELEASE MAY 28, 1952

MINERAL MARKET REPORT
MMS NO. 2075

BORON MINERALS IN 1951

The high level of industrial activity during 1951 created an unprecedented demand for boron compounds and as a result a new production record was established for this important industrial raw material. Output reached 862,797 short tons as compared with 647,735 short tons in 1950, according to reports of producers to the Bureau of Mines, United States Department of the Interior.

In 1951 the following firms reported production of boron minerals:

American Potash & Chemical Corp., 3030 West Sixth Street, Los Angeles 54, Calif., plant at Trona, on Searles Lake.
Pacific Coast Borax Co., 630 Shatto Place, Los Angeles 5, Calif., mines at Death Valley Junction and Boron.
United States Borax Co., 630 Shatto Place, Los Angeles 5, Calif., mine near Shoshone.
West End Chemical Co., 608 Latham Square Building, Oakland 12, Calif., plant at Westend, on Searles Lake.

Boron Minerals and compounds sold or used by producers in the United States 1947-51 1/

Year	Gross weight Short tons	B_2O_3 content Short tons	2/ Value
1947	501,935	145,700	$11,844,108
1948	450,932	134,700	11,147,735
1949	467,592	139,200	11,511,893
1950	647,735	191,000	15,890,000
1951 (preliminary)	862,797	241,000	20,030,000

1/ Borax, anhydrous sodium tetraborate, kernite, boric acid, and colemanite
2/ Partly estimated.

Prepared by Joseph C. Arundale and F. M. Barsigian under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

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FOR RELEASE MAY 29, 1952

MINERAL MARKET REPORT
MMS NO. 2076

IRON BLAST-FURNACE SLAG PRODUCTION ESTABLISHES NEW RECORDS IN 1951

A new record output of 29,327,434 short tons valued at $36,307,693 was established by the iron blast-furnace slag industry in 1951. These statistics were compiled from a canvass conducted by the National Slag Association in cooperation with the Bureau of Mines, Department of the Interior. Included are the outputs of 43 companies operating 68 plants for processing air-cooled slag and from 16 plants expanding slag. Fourteen companies reported production of granulated slag.

Screened air-cooled slag, the major product, set a record high of 23,276,692 short tons valued at $29,531,983 - increases of 16 and 21 percent, respectively, as compared to 1950. Of this total, 21,076,059 short tons, or 91 percent, was used as railroad ballast, as aggregate in portland cement concrete, bituminous construction of all types and miscellaneous highway construction uses. Other principal uses for this type were in the manufacture of concrete block, mineral wool, and built-up roofing and roofing granules. Details of the tonnage and value of slag sold or used by processors in 1951, by uses, are shown in the accompanying tables.

Marked increases were noted in the tonnage and value of unscreened air-cooled slag, which totaled 1,732,969 short tons valued at $969,975 - increases of 72 and 52 percent, respectively, over the 1950 figures. As in former years, approximately one-half of this material was used as aggregate in highway and airport construction.

Granulated slag increased 4 percent, amounting to 2,249,281 short tons, of which 53 percent was utilized as a raw material in the manufacture of hydraulic cement, 34 percent was used as road fill, and 7 percent was used as aggregate in concrete block.

The consumption of expanded slag in 1951 reached 2,068,492 short tons valued at $4,917,091 - gains of 21 and 31 percent, respectively, as compared to 1950. The bulk of this material was used in concrete block manufacture, with a small percentage finding application as an aggregate in lightweight concrete.

Iron blast-furnace slag is produced in many States, but most of the material is processed in the steel centers of Ohio, Pennsylvania, Alabama and Illinois. As in several years past, Ohio was again the largest producer of air-cooled slag.

As in past years, virtually the entire tonnage of processed slag in 1951 was moved by rail and truck, with waterway transportation accounting for only 2 percent of the total. Railroads handled 47 percent and trucks 51 percent. For the third successive year these figures have remained unchanged.

Prepared by O. S. North, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

The recovery of iron by processors during 1951 amounted to 368,526 short tons - an increase of 24 percent over the previous year's figures.

A total of 2,100 plant and yard personnel worked 5,369,000 man-hours in the production of processed slag during 1951. These compare to 5,399,500 man-hours and 2,015 plant and yard employees in 1950.

Salient statistics for the iron blast-furnace slag industry are shown in the accompanying tables.

Air-cooled iron blast-furnace slag sold or used by processors in the United States in 1951, by uses
(National Slag Association)

Use	Screened		Unscreened	
	Short tons	Value	Short tons	Value
Aggregate in:				
Portland-cement concrete construction	2,367,983	$ 3,145,684	....	....
Bituminous construction (all types)..	5,973,795	8,321,401	....	....
Highway and airport construction 1/..	8,033,436	10,707,112	877,725	$566,498
Manufacture of concrete block........	746,462	937,495	....	....
Railroad ballast.....................	4,700,845	4,399,072	228,224	80,694
Mineral Wool.........................	467,714	619,573	108	108
Roofing (cover material and granules).	431,182	793,828	....	....
Sewage trickling filter medium........	41,075	72,789	....	....
Agricultural slag, liming............	18,274	25,067	....	....
Other uses...........................	495,926	509,962	626,912	322,675
Total............................	23,276,692	29,531,983	1,732,969	969,975

1/ Other than in portland-cement concrete and bituminous construction.

Granulated and expanded iron blast-furnace slag sold or used by processors in the United States in 1951, by uses
(National Slag Association)

Use	Granulated		Expanded	
	Short tons	Value	Short tons	Value
Road fill, etc.......................	765,362	$577,467	....	....
Agricultural slag, liming............	47,786	61,690	....	....
Manufacture of hydraulic cement.......	1,193,585	(1/)	....	....
Aggregate for concrete-block manufacture	166,454	210,665	2,015,530	$4,776,353
Aggregate in lightweight concrete.....	....	....	46,667	122,588
Other uses...........................	76,094	38,822	6,295	18,150
Total............................	2,249,281	2/888,644	2,068,492	4,917,091

1/ Data not available.
2/ Excludes value of slag used for hydraulic cement manufacture.

Average value per short ton of iron blast-furnace slag sold or used by processors in the United States in 1951, by uses
(National Slag Association)

Use	Air-cooled		Granulated	Expanded
	Screened	Unscreened		
Aggregate in:				
Portland-cement concrete construction	$1.33	.....	.....	1/$2.63
Bituminous construction (all types)..	1.39	.....	.....	.....
Highway and airport construction 2/..	1.33	$0.65	.....	.....
Manufacture of concrete block........	1.26	.....	$1.27	2.37
Railroad ballast.....................	.94	.35	.....	.....
Mineral wool.........................	1.32	1.00	.....	.....
Roofing (cover material and granules).	1.84	.....	.....	.....
Sewage trickling filter medium........	1.77	.....	.....	.....
Agricultural slag, liming.............	1.37	.....	1.29	.....
Road fill, etc.	.....	.....	.75	.....
Other uses............................	1.03	.51	.51	2.88

1/ Lightweight concrete.

2/ Other than in portland-cement concrete and bituminous construction.

Iron blast-furnace slag processed in the United States, by States, in 1951
(National Slag Association)

	Screened Air-Cooled			All Types		
	Quantity			Quantity		
	Short tons	Percent of total	Value	Short tons	Percent of total	Value
Alabama.........	5,157,552	22	$5,352,752	6,156,745	21	$ 6,791,654
Ohio............	5,675,671	24	8,025,708	8,078,142	28	9,781,764
Pennsylvania....	4,130,577	18	6,119,694	5,071,810	17	7,332,495
Other States 1/.	8,312,892	36	10,033,829	10,020,737	34	12,401,780
	23,276,692	100	$29,531,983	29,327,434	100	$36,307,693

1/ California, Colorado, Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, New York, Tennessee, Texas, and West Virginia.

Interior Duplicating Section, Washington, D. C.

Consumption of fluorspar established a new high in 1951; it was 497,012 sho tons compared with 426,121 tons in 1950 and with 410,170 tons in 1944, the previous record year. The steel industry, which set a new production record in 1951, continued to be the predominant user of fluorspar and despite the fact that its total consumption of fluorspar established a new record, it absorbed proportionately less (55.7 percent) of the total consumed in 1951 than in 1950 (56.5 percent). Use by the industry was 15 percent greater than in 1950 and, because of the higher steel production in 1951 and the larger utilization of fluorspar per ton of steel made than in 1950, its total consumption exceeded by 14 percent the record made in 1942. The average consumption of fluorspar per long ton of basic steel produced was 5.8 pounds in 1951 compared with 5.5 pounds in 1950 and 6.4 pounds in 1942. The hydrofluoric-acid industry, the second-largest utilizer of fluorspar, consumed 22 percent more than in 1950 and accounted for 31 percent of the total in 1951 compared with 29 percent in 1950. Consumption of fluorspar by the glass industry, was greater but less was used by the enamel trade.

Imports of fluorspar into the United States established a new record in 1951; they were 181,275 short tons compared with 164,634 tons in 1950, the previous all-time high. Mexico continued to be the chief source of the imports in 1951 but supplied proportionately less than in 1950. Moreover, imports from Mexico in 1951 were 12 percent smaller than in 1950. Noteworthy were the much larger imports of fluorspar from Germany in 1951.

The following tables show details of shipments, consumption, and imports of fluorspar in 1950 and 1951:

Fluorspar of domestic origin shipped from mines in the United States, 1950-51, by States

State	1950			1951		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Colorado..........	18,489	$654,089	$35.38	20,661	$820,322	$39.70
Illinois..........	154,623	6,110,765	39.52	204,328	9,294,703	45.49
Kentucky..........	80,137	2,554,668	31.88	68,635	2,334,485	34.01
New Mexico........	20,036	742,408	37.05	24,402	1,163,098	47.66
Utah..............	18,936	337,912	17.84	17,827	398,480	22.35
Other States:						
Tennessee........	-	-	-	140	358,433	32.09
Idaho............	-	-	-	9,408		
Nevada...........	7,577	219,875	23.67	1,623		
Arizona..........	952					
Montana..........	41			-	-	-
Texas............	719			-	-	-
	301,510	10,619,717	35.22	347,024	14,369,521	41.41

Fluorspar of domestic origin shipped from mines in the United States, 1950-1951, by uses

Use	1950			1951		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Steel..........	149,410	$ 4,384,271	$29.34	167,042	$5,742,358	$34.38
Iron foundry...	3,945	134,929	34.20	4,139	170,051	41.09
Glass..........	30,450	1,176,994	38.65	33,036	1,407,741	42.61
Enamel.........	7,832	327,081	41.76	6,356	293,359	46.15
Hydrofluoric acid..........	97,659	4,164,901	42.65	1/ 123,125	1/ 6,162,064	1/ 50.05
Miscellaneous..	11,486	401,795	34.98	12,178	542,139	44.52
Exported.......	728	29,746	40.86	1,148	51,809	45.13
	301,510	10,619,717	35.22	347,024	14,369,521	41.41

1/ Includes shipments to Government stock pile.

Fluorspar of domestic origin shipped from mines in the United States, 1950-51, by grades and industries, in short tons

Grade and industry	1950	1951
Fluxing gravel and foundry lump:		
Ferrous	1/141,375	1/158,346
Nonferrous	826	975
Cement	525	330
Miscellaneous	3,295	876
Exported	8	139
	1/146,029	1/160,666
Ground and flotation concentrates:		
Ferrous 2/	1/ 15,144	1/ 15,053
Nonferrous	1,464	3,160
Glass and enamel	38,282	39,392
Hydrofluoric acid	97,659	3/123,125
Cement	81	--
Miscellaneous	2,131	4,619
Exported	720	1,009
	1/155,481	186,358
Total:		
Ferrous	156,519	173,399
Nonferrous	2,290	4,135
Cement	606	330
Glass and enamel	38,282	39,392
Hydrofluoric acid	97,659	3/123,125
Miscellaneous	5,426	5,495
Exported	728	1,148
	301,510	347,024

1/ Fluxing gravel includes (and flotation concentrates exclude) the following quantities of flotation concentrates blended with fluxing gravel: 1950, 11,240 tons; 1951, 19,660 tons.

2/ Includes pelletized gravel.

3/ Includes shipments to Government stockpile.

Fluorspar (domestic and foreign) consumed and in stock in the United States 1950-51, by industries, in short tons

Industry	1950			1951		
	Consumption	Stocks at consumers' plants Dec. 31	In transit to consumers' plants Dec. 31	Consumption	Stocks at consumers' plants Dec. 31	In transit to consumers' plants Dec. 31
Basic open-hearth steel	212,928	131,924	4,307	242,180	138,113	5,062
Electric-furnace steel	27,567			34,058		
Bessemer steel	307			416		
Iron foundry..	5,956	1,709	118	6,460	2,354	41
Ferro-alloys..	3,753	753	39	2,888	1,051	--
Hydrofluoric acid 1/......	124,440	19,417	223	151,698	15,253	1,285
Primary aluminum 2/..	1,167	820	50	2,751	1,174	170
Primary magnesium.....						
Glass.........	33,440	5,134	908	35,505	6,731	735
Enamel........	7,723	1,468	281	6,736	1,467	218
Cement........	485	1,060	25	213	1,174	--
Miscellaneous.	8,355	2,400	94	14,107	1,809	38
	426,121	164,685	6,045	497,012	169,126	7,549

1/ Fluorspar used in making artificial cryolite and aluminum fluoride (aluminum raw materials) is included in the figures for hydrofluoric acid, which is an intermediate in their manufacture.

2/ Figures on consumption represent fluorspar used as a flux; see footnote 1.

Fluorspar (domestic and foreign) consumed in the United States, by States, 1950-51, in short tons

State	1950	1951
Alabama	12,882	14,068
Georgia		
Arkansas	26,017	32,637
Florida		
Louisiana		
Mississippi		
North Carolina		
South Carolina		
California	10,725	12,886
Colorado	16,841	18,289
Iowa		
Utah		
Connecticut	887	927
Delaware	33,112	33,985
District of Columbia		
New Jersey		
Illinois	69,011	81,725
Indiana	30,465	27,179
Kansas	80	195
Nebraska		
South Dakota		
Wyoming		
Nevada	-	
Kentucky	15,238	20,760
Maine	1,530	2,078
Massachusetts		
Rhode Island		
New Hampshire		
Maryland	7,437	8,240
Michigan	13,799	19,779
Minnesota	6,441	5,970
Wisconsin		
Missouri	3,809	4,359
New York	15,648	18,805
Ohio	67,182	75,593
Oklahoma	1,110	1,163
Oregon	1,387	2,188
Washington		
Pennsylvania	78,205	89,346
Tennessee	715	571
Texas	9,576	19,902
Virginia	87	601
West Virginia	3,937	5,766
Total	426,121	497,012

uorspar imported for consumption in the United States in 1951, by countries
(Source: U. S. Department of Commerce)

Country	Containing more than 97 percent calcium fluoride		Containing not more than 97 percent calcium fluoride		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
Algeria.......	560	$11,000	--	--	560	$11,000
Canada........	15,289	491,644	6,171	$221,536	21,460	713,180
France........	849	22,461	566	10,270	1,415	32,731
Germany.......	14,327	562,368	34,747	649,161	49,074	1,211,529
Italy.........	6,492	282,376	5,312	67,581	11,804	349,957
Mexico........	3,819	79,603	60,206	940,087	64,025	1,019,690
Spain.........	11,583	448,139	21,282	322,365	32,865	770,504
Union of South Africa.	72	1,490	--	--	72	1,490
Total: 1951	52,991	1,899,081	128,284	2,211,000	181,275	4,110,081
1950	43,488	1,050,305	121,146	1,529,362	164,634	2,579,667

Imported fluorspar delivered to consumers in the United States, 1950-51, by uses

Use	1950			1951		
	Short tons	Selling price at tidewater, border, or f.o.b. mill in the United States, including duty		Short tons	Selling price at tidewater, border, or f.o.b. mill in the United States, including duty	
		Total	Average		Total	Average
Steel.......	122,459	$3,250,070	$26.54	119,989	$4,105,764	$34.22
Hydrofluoric acid.......	29,742	1,316,595	44.27	26,506	1,341,339	50.61
Ferro-alloys	458	10,207	22.29	1,124	33,894	30.15
Glass and enamel.....	3,252	154,180	47.41	4,232	220,665	52.14
Other.......	6,626	223,669	33.76	8,568	349,151	40.75
	162,537	4,954,721	30.48	160,419	6,050,813	37.72

Interior-Duplicating Sec., Washington, D. C.

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MINERAL MARKET REPORT
M. M. S. NO. 2078

PEAT IN THE UNITED STATES IN 1951

PRODUCTION

According to reports received by the Bureau of Mines, United States Department of the Interior, peat production in the United States totaled 194,416 short tons in 1951, an increase of about 49 percent over 1950, when 130,723 tons were reported produced. Although the industry in general showed a substantial increase over 1950, part of the rise in production in 1951 can be attributed to the output of a number of new operations reporting to the Bureau for the first time. Sixty-three producers operating in 17 States contributed to the 1951 production.

Washington was the largest peat-producing State in 1951, followed, in order of output by New Jersey, Florida, Ohio, Michigan, Iowa, Pennsylvania, California, Indiana, Connecticut, Illinois, Georgia, Colorado, Maine, Texas, Wisconsin, and Massachusetts.

Peat humus was produced in 14 States in 1951 and accounted for about 64 percent of the total production; reed or sedge, produced in 8 States, accounted for about 24 percent, and moss peat and other, produced in 9 States, about 12 percent.

Table 1 shows the production of peat in the United States in 1951, by States.

VALUE

Although the total value of peat produced in 1951, $1,489,225, represents a 30-percent increase over the 1950 value of $1,142,566, the average value per ton in 1951, $7.66, showed a decrease of 12.4 percent from the 1950 value of $8.74. The over-all decline in the average per-ton value and, particularly, the sharp decline in the average value of moss peat can be attributed principally to the low value reported by two large producers of moss peat.

Tables 2 and 3 show, respectively, peat production and value in the United States in the period 1947-51, and peat production in the United States, by kinds, in the period 1950-51.

Prepared by Golden V. Chiriaco, under the supervision of J. A. Corgan, Chief, Anthracite and Coke Sections, Coal Branch, T. W. Hunter, Chief.

6-188

Table 1.--Peat produced in the United States, 1949-51, by States

State	1949		1950		1951	
	Short tons	Value	Short tons	Value	Short tons	Value
California-------	5,670	$35,193	6,399	$37,192	6,432	$42,016
Colorado---------	2,800	24,504	3,210	28,088	2,241	19,611
Connecticut------	5,974	33,011	6,294	35,145	5,586	33,702
Florida----------	11,800	69,000	23,022	151,270	25,748	161,417
Georgia----------	1,870	56,000	1,750	41,000	2,250	41,000
Indiana----------	7,949	28,537	5,793	18,966	5,699	22,824
Iowa-------------	(1)	(1)	3,000	19,500	13,545	107,909
Maine------------	3,312	79,360	2,912	61,600	1,805	36,870
Massachusetts----	595	7,415	650	7,575	(1)	(1)
Michigan---------	(1)	(1)	12,750	174,000	20,180	320,100
Minnesota--------	12,820	54,255	400	13,100	-------	-------
New Hampshire----	15	296	-------	-------	-------	-------
New Jersey-------	25,500	180,750	26,466	186,338	27,678	213,500
Ohio-------------	20,372	181,117	22,145	245,379	21,378	261,891
Pennsylvania-----	6,663	30,035	(1)	(1)	8,591	46,568
Texas------------	1,531	12,000	977	10,566	1,238	10,750
Washington-------	(1)	(1)	-------	-------	45,304	98,955
Wisconsin--------	(1)	(1)	2,293	9,536	(1)	(1)
Other States-----	2/ 22,661	2/ 228,541	2/ 12,662	2/ 103,311	2/ 6,741	2/ 72,112
Total ------------	129,532	1,020,014	130,723	1,142,566	194,416	1,489,225

1/ Reported under "Other States" to avoid disclosure of individual company operations.
2/ Includes data for Illinois and States indicated by footnote 1.

Table 2.--Peat production and value in the United States, 1947-51

Year	Short tons	Value	
		Total	Average per ton
1947----------------	136,232	$868,979	$6.38
1948----------------	129,581	929,560	7.17
1949----------------	129,532	1,020,014	7.87
1950----------------	130,723	1,142,566	8.74
1951----------------	194,416	1,489,225	7.66

Table 3.--Peat produced in the United States, by kinds, 1950-51

Kind	1950			1951		
	Short tons	Value		Short tons	Value	
		Total	Per ton		Total	Per ton
Moss peat----------	9,139	$109,196	$11.95	1/ 24,001	$140,870	$5.87
Reed or sedge-------	35,791	328,365	9.17	46,643	463,131	9.93
Peat humus----------	85,243	704,332	8.26	123,772	885,224	7.15
Other---------------	550	673	1.22	(2)	(2)	(2)
Total---------------	130,723	1,142,566	8.74	194,416	1,489,225	7.66

1/ Includes negligible quantity of "Other" types of peat.
2/ Reported under "Moss peat" to avoid disclosure of individual company operations.

USES

For many years peat has been used in this country primarily for soil improvement. Of the total sales reported for 1951, about 73 percent was for soil improvement; about 19 percent was sold for mixed fertilizers; and about 8 percent, for other miscellaneous uses.

United States Government Specifications.--The Federal Government purchases a certain amount of peat principally for horticultural purposes, provided the peat meets required specifications. These specifications may be obtained from the Federal Supply Service, General Services Administration, Washington 25, D. C.

Table 4 shows sales of peat in the United States, by uses, in the period 1947-51.

Table 4.--Peat sold in the United States, 1947-51, by uses

Year	Soil improvement		Mixed fertilizers		Other uses		Total	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
1947---------	105,796	$584,012	28,354	$266,359	1,561	$17,593	135,711	$867,964
1948---------	86,991	578,615	36,012	309,259	6,000	36,000	129,003	923,874
1949---------	76,963	546,062	40,897	385,015	11,672	89,237	129,532	1,020,314
1950---------	87,090	704,200	36,433	391,174	7,198	47,345	130,721	1,142,719
1951---------	138,712	962,002	37,233	364,164	14,800	141,268	190,745	1,467,434

IMPORTS

According to data compiled from records of the U. S. Department of Commerce, the quantity of moss peat imported into the United States in 1951 totaled 144,531 short tons, an increase of 16.2 percent over the 124,382 tons imported in 1950, and 83.9 percent over the 1939 prewar figure of 78,611 tons. No exports of peat were reported, consequently, the quantity available for domestic consumption in 1951 totaled 338,947 tons.

Table 5.--Moss peat imported for consumption in the United States 1949-51, by kinds and by countries

(U. S. Department of Commerce)

Country	Poultry and stable grade					
	1949		1950		1951	
	Short tons	Value	Short tons	Value	Short tons	Value
Canada ------------	25,473	$890,230	1/ 20,807	$828,966	17,963	$734,549
Denmark -----------	32	838	50	1,254	-------	-------
Germany -----------	1,646	43,177	1/ 8,252	1/ 219,766	11,539	343,769
Ireland -----------	434	19,680	682	21,546	97	3,320
Netherlands -------	474	12,622	923	17,128	1,083	43,916
Poland-Danzig -----	122	3,900	-------	-------	-------	-------
Sweden ------------	16	464	63	2,221	65	2,008
United Kingdom ----	-------	-------	34	812	18	790
Total --------	28,197	970,911	1/ 30,811	1/ 1,091,693	30,765	1,128,352

Country	Fertilizer grade					
	1949		1950		1951	
	Short tons	Value	Short tons	Value	Short tons	Value
Belgium-Luxembourg -	55	$710	-------	-------	-------	-------
Canada -------------	48,162	1,651,913	46,762	$1,610,988	56,101	$2,196,367
Denmark ------------	1,145	31,909	1,051	24,550	325	6,507
Germany ------------	5,306	136,045	1/ 30,902	1/ 780,265	47,700	1,230,544
Ireland ------------	2,800	112,545	2,171	74,126	1,139	40,921
Netherlands --------	5,894	154,593	7,673	149,011	6,485	189,331
Norway -------------	2	51	-------	-------	-------	-------
Poland-Danzig ------	2,735	106,351	3,823	106,325	1,846	53,815
Sweden -------------	367	17,541	432	12,482	22	556
United Kingdom------	84	1,840	757	17,487	148	4,143
Total ---------	66,550	2,213,498	1/ 93,571	1/ 2,775,234	113,766	3,722,184

1/ Revised figure.

WORLD PRODUCTION

Data on world production of peat for 1951 will be published in the preprint chapter of the Minerals Yearbook

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M. M. S. No. 2079

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

NICKEL IN 1951

Allocation, prohibition or restriction in all non-essential items, inadequate supplies, higher prices, smaller consumption in the United States, and an increase in output in Canada were important features of nickel in 1951, according to the Bureau of Mines, United States Department of the Interior.

Despite the fact that the supply of new nickel for the United States in 1951 was 1.7 percent larger than in 1950, it was inadequate for industry requirements and stockpile commitments. Consequently, consumption and procurement of nickel were subject to NPA Order M-14, effective January 1, 1951, and effective October 1 nickel was placed under complete allocation under Order M-80. Total reported consumption of nickel in the United States in 1951 was 13 percent less than in 1950, which, however, was a peacetime record. Deliveries of nickel to the Government stockpile were larger. Stocks of nickel held by consumers in the United States declined 5 percent. The price of nickel was raised 6 cents a pound on June 1, bringing the United States duty paid price of electrolytic nickel to 56½ cents. Output of nickel in Canada was 137,268 short tons in 1951, an increase of 11 percent over 1950.

Total consumption of nickel was 172,832,432 pounds in 1951, of which about 44 percent was utilized in stainless and other steels. Usage of nickel in stainless steel was 4 percent more in 1951 than in 1950, but that for other steels was 8 percent less. Consumption of nickel in high-temperature and electrical-resistance alloys was up 30 percent but usage for anodes, nonferrous alloys, and cast irons declined 66, 6, and 24 percent, respectively. Most of the nickel consumed in 1951 was in the form of metal, but the proportion of oxide and oxide sinter used was appreciably less in 1951 than in 1950.

The data in the tables on consumption cover all known consumers of nickel in the form of new metal, matte, and oxide. The figures for nickel salts, however, fall short of the total and probably represent only 46 and 59 percent, respectively, of the totals in 1951 and 1950.

Prepared by Hubert W. Davis, under the supervision of Norwood B. Melcher, Chief, Ferrous Metals & Alloys Branch, Minerals Division.

Nickel (exclusive of purchased and home scrap) consumed and in stock in the United States, 1950-51, by forms, in pounds of contained nickel

Form	Stocks at consumers' plants Dec. 31, 1950	Consumption		Stocks at consumers' plants Dec. 31, 195
		1950	1951	
Metal [1]	9,425,850	148,508,734	135,919,818	8,075,814
Oxide and oxide sinter	575,309	28,840,556	17,492,609	1,365,801
Matte	1,295,198	17,843,880	17,481,384	1,197,296
Salts	516,809	2,614,529	1,938,621	592,690
	11,813,166	197,807,699	172,832,432	11,231,601

[1] Includes a relatively small but undetermined quantity of secondary nickel (ingot or shot remelted from scrap nickel and scrap nickel alloys).

Nickel (exclusive of purchased and home scrap) consumed in the United States, 1950-51, by uses

Use	Pounds of nickel	
	1950	1951
Ferrous:		
Stainless steels	41,822,486	43,584,274
Other steels	35,554,167	32,850,461
Cast irons	9,761,622	7,430,972
Nonferrous (comprises copper-nickel alloys, nickel-silver, brass, bronze, beryllium, magnesium, and aluminum alloys, and Monel, Inconel, and malleable nickel)	56,277,962	52,675,585
High temperature and electrical resistance alloys	11,407,174	14,815,616
Electroplating:		
Anodes	34,847,601	11,967,184
Solutions	[1] 1,481,215	[1] 562,033
Catalysts	2,015,234	2,768,905
Ceramics	[1] 604,766	495,355
Magnets	1,946,971	1,291,856
Other	2,088,511	4,390,191
	197,807,699	172,832,432

[1] Figures fall short of the totals.

Domestic production of nickel, as heretofore, was small in 1951; it was 1,513,000 pounds and comprised both crude and refined nickel sulfate recovered as a byproduct of copper refining. Shipments were 1,551,000 pounds, the bulk of which was crude nickel sulfate sold to refiners for use as an intermediate in the manufacture of refined nickel salts. In addition to the nickel recovered as a byproduct of copper refining in 1951, 3,877,000 pounds (nickel content) of refined nickel salts (chiefly sulfate) were produced in the United States from domestic crude nickel sulfate and from nickel shot and nickel scrap. The total production of refined nickel salts in the United States was 4,380,000 pounds (nickel content) in 1951; shipments to consumers for electroplating, catalysts, and ceramics were 4,365,000 pounds.

Imports of nickel in all forms were 2 percent greater in 1951 than in 1950. As heretofore, Canada was the chief source of the imports; it supplied 143,166,541 pounds of refined nickel, 25,655,526 pounds of matte, 23,972,556 pounds of oxide and oxide sinter, 162,157 pounds of nickel scrap, 30,928 pounds of nickel bars, rods, etc., 3,458 pounds of nickel-silver, and 564,246 pounds of nickel residues. In 1951, Norway furnished 9,607,810 pounds of refined nickel; the United Kingdom 143,410 pounds of refined nickel, 762,855 pounds of nickel scrap, and 11,334 pounds of bars, rods, etc.; Belgium and Luxembourg 10,011 pounds of refined nickel, 4,050 pounds of nickel scrap, and 4,367 pounds of bars, rods, etc.; France 432,430 pounds of refined nickel, 470,453 pounds of nickel scrap, and 7,821 pounds of bars, rods, etc.; Japan 2,134 pounds of ore or matte and 15,719 pounds of nickel scrap; and Sweden 100 pounds of refined nickel, 22 pounds of oxide, and 55 pounds of bars, rods, etc. Australia, Austria, Canal Zone, Cuba, Portugal, and Union of South Africa supplied 119,175 pounds of nickel scrap; Canal Zone, Germany, and Mexico 20,549 pounds of bars, rods, etc.; and Germany 33 pounds of nickel silver.

The nickel content of the unmanufactured new nickel products imported into the United States is estimated at 186,232,000 pounds in 1951, compared with 183,106,000 pounds in 1950.

Exports of nickel comprise largely products manufactured from imported raw materials. Exports of alloys and scrap (including Monel metal), which comprise the bulk of the foreign shipments, were 41 percent more in 1951 than in 1950; but those of metal, nickel-chrome electric-resistance wire, and nickel silver were smaller by 43, 8, and 11 percent, respectively. The United Kingdom (4,821,471 pounds) and Canada (2,247,391 pounds) were the chief foreign markets for metal, Monel metal, alloys, and scrap in 1951.

Nickel products imported for consumption in the United States, 1950-51, by classes, in pounds
(Source: U. S. Department of Commerce)

Class	1950	1951
Nickel ore and matte	22,270,886	25,657,660
Nickel pigs, ingots, shot, cathodes, etc. 1/	2/139,647,935	153,360,302
Nickel scrap 1/	1,250,663	1,581,742
Nickel bars, rods, tubes, etc	73,907	75,054
Nickel oxide	32,612,122	23,972,578
Nickel silver or German silver in sheets, strips, rods and wire	61,964	3,491

1/ Adjusted by Bureau of Mines.
2/ Revised figure.

Nickel products exported from the United States, 1950-51, by classes, in pounds
(Source: U. S. Department of Commerce)

Class	1950	1951
Ore, concentrates, and matte	12,826	35,578
Alloys and scrap containing nickel (including Monel metal)	5,675,191	7,984,503
Metal in ingots, bars, sheets, etc	676,169	386,310
Nickel-chrome electric resistance wire	428,885	393,599
Nickel silver or German silver, crude, scrap, bars, rods, etc	496,598	443,175

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MINERAL MARKET REPORT
M.M.S. NO. 2080

PRODUCTION OF COKE AND COAL CHEMICALS FROM COAL-GAS RETORTS IN 1951

Production of retort coke in the United States in 1951 decreased 27 percent from the 1950 output, according to data submitted by gas utility companies to the Bureau of Mines, United States Department of the Interior. Coal-gas retorts are rapidly disappearing in the United States and are no longer an important source of coke and tar, which are secondary products in the manufacture of gas. In 1951, coke and tar from coal-gas retorts were but 0.1 and 0.4 percent, respectively, of the production from coke ovens. In the early days of the manufactured gas industry in the United States, coal gas was the predominant type made and more than 500 coal-gas plants were in operation in 1900. More flexible and economical processes of manufacturing gas were developed in the ensuing years and coal gas began to lose ground to oil gas, water gas, and mixed gases. In recent years the development of high-pressure transcontinental pipe lines has had an even more profound effect on coal-gas plants and has enabled natural gas to reach areas formerly served by coal gas. These factors have steadily reduced the number of plants operating gas retorts and at the close of 1951 only 10 remained in active production with every indication that most of these will close in the near future.

One of the greatest difficulties in the extension and even maintenance of large coal-gas plants has been the lack of an outlet for the coke, which is ordinarily not adapted for foundry or metallurgical purposes. It is, however, suitable for residential heating and most of the coke not used in producing plants is sold for this purpose. In 1951, about 68 percent of the coke produced was used by the operators for making producer gas, water gas, heating benches, etc., and the bulk of the remainder was sold for residential heating.

The only chemical raw material recovered by all retort operators is crude coal tar. Production of this material, however, has declined from around 50,000,000 gallons annually in the late 1920's to less than 3,000,000 gallons in 1951. Nearly all of the crude tar recovered at coal-gas plants is sold to tar distillers for processing into various tar products. The rapidity with which coal-gas plants have been shut down in recent years has drastically reduced the supply of crude tar for refining, particularly in New England and along the Eastern Seaboard. This has caused some tar-refining operations in these areas to close because of a lack of raw material. While considerable quantities of ammonia (in the form of ammonia liquor) and crude light oil were produced during and shortly after World War I, no production of ammonia was reported in 1951 and only a small quantity of crude light oil (including drip oil) was recovered.

Copies of a directory of coal-gas plants in existence on December 31, 1951, may be obtained on request to the Anthracite and Coke Sections, Coal Branch, Bureau of Mines, Washington 25, D. C.

TABLE 1. - Salient statistics of the coal-gas industry in the United States in 1951

	Horizontal retorts	Vertical retorts	Total
Coke produced:			
Net tons	51,822	74,816	126,638
Value	$692,426	$862,080	$1,554,506
Screenings or breeze produced ... net tons	5,868	13,537	19,405
Coal charged into retorts:			
Net tons	78,472	128,296	206,768
Value	$872,121	$1,567,227	$2,439,348
Average per ton	$11.11	$12.22	$11.80
Average yield in percent of coal charged:			
Coke	66.04	58.32	61.25
Breeze (at plants actually recovering)	8.06	10.55	9.65
Retorts:			
In existence December 31	346	53	399
In operation December 31	212	37	249
Annual coal capacity ... net tons	98,200	94,200	192,400
Coke used by producer -			
For manufacture of producer or water gas:			
Net tons	15,194	30,735	45,929
Value	$210,706	$337,997	$548,703
For bench fuel:			
Net tons	13,694	18,557	32,251
Value	$175,285	$218,219	$393,504
For other purposes:			
Net tons	6,124	2,131	8,255
Value	$81,825	$22,764	$104,589
Coke sold to other consumers -			
For manufacture of water gas:			
Net tons	1,507	107	1,614
Value	$23,211	$1,638	$24,849
For other industrial use:			
Net tons	45	1,118	1,163
Value	$480	$10,730	$11,210
For domestic use:			
Net tons	10,327	28,859	39,186
Value	$141,946	$340,184	$482,130
Stocks on January 1, 1952:			
Coke ... net tons	5,112	18,013	23,125
Breeze ... do	890	320	1,210
Coal-chemical materials:			
Tar:			
Production ... gallons	957,350	1,966,550	2,923,900
Sales -			
For refining:			
Gallons	787,159	2,108,878	2,896,037
Value	$60,360	$140,245	$200,605
For other purposes:			
Gallons	61,603	93,556	155,159
Value	$4,550	$6,775	$11,325
Stocks on January 1, 1952 ... gallons	311,103	1,359,459	1,670,562
Per ton of coal charged ... do	12.20	15.33	14.14
Crude light oil: a/			
Production ... do	41,909	57,073	98,982
Sales ... do	39,059	43,126	82,185
Value of sales	$5,859	$3,858	$9,717
Stocks on January 1, 1952 ... gallons	8,600	26,000	34,600
Per ton of coal charged ... do	1.45	1.80	1.63

a/ Includes drip oil.

TABLE 2. - Number of retorts, coal charged, coke produced, value, and stocks at coal-gas plants in the United States in 1951, by States

	Active plants	Retorts, end of year		Coal charged (net tons)	Yield of coke from coal (percent)	Coke produced (net tons)	Value of coke		On hand December 31 (net tons)
		In existence	In operation				Total	Per ton	
Alabama and North and South Carolina	4	108	108	37,302	66.20	24,693	$264,543	$10.71	1,345
Colorado, Indiana, Iowa, and North Dakota	3	51	29	31,314	61.36	19,215	257,588	13.41	2,459
Connecticut, Massachusetts, and New Jersey	5	180	64	121,603	59.70	72,596	883,655	12.17	18,621
Michigan and Wisconsin	3	60	48	16,549	61.24	10,134	148,720	14.68	700
	15	399	249	206,768	61.25	126,638	1,554,506	12.28	23,125

TABLE 3. - Coal charged and coke produced at coal-gas plants in the United States, 1948-51, by geographical regions, in net tons

	1948		1949		1950		1951	
	Coal charged	Coke produced	Coal charged	Coke produced	Coal charged	Coke produced	Coal charged	Coke produced
New England	484,161	269,541	326,831	194,267	175,834	97,286	121,603	72,596
Middle Atlantic	49,911	31,177	(a)	(a)	(a)	(a)	(a)	(a)
Ohio	(b)	(b)	-------	-------	-------	-------	-------	-------
Michigan	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Illinois-Indiana	24,455	15,792	-------	-------	-------	-------	-------	-------
Missouri Valley	(b)	(b)	(c)	(c)	(c)	(c)	(c)	(c)
Lake Dock	235,229	148,997	209,008	131,255	57,241	35,451	45,657	27,906
Southeast	103,422	63,867	87,371	53,899	67,149	41,685	39,508	26,136
Southwest, Mountain, and Pacific	(b)	(b)	(d)	(d)	(d)	(d)	(d)	(d)
	897,178	529,374	623,210	379,421	300,224	174,422	206,768	126,638

a/ Included with New England. b/ Included with Illinois-Indiana. c/ Included with Lake Dock. d/ Included with Southeast.

TABLE 4. - Retort coke used by producer in the United States and sold in 1951, by States

	Used by producer -					
	To make producer or water gas		For bench fuel		For other purposes	
	Net tons	Value	Net tons	Value	Net tons	Value
Alabama and North and South Carolina	6,675	$66,750	6,890	$72,359	3,023	$32,041
Colorado, Indiana, Iowa, and North Dakota	2,976	42,407	5,187	69,864	699	7,359
Connecticut, Massachusetts, and New Jersey	36,251	439,236	17,884	224,534	4,502	64,833
Michigan and Wisconsin	27	310	2,290	26,747	31	356
	45,929	548,703	32,251	393,504	8,255	104,589

	Sold -					
	For manufacture of water gas		For other industrial use		For domestic use	
	Net tons	Value	Net tons	Value	Net tons	Value
Alabama and North and South Carolina	-------	-------	45	$480	4,231	$53,219
Colorado, Indiana, Iowa, and North Dakota	107	$1,638	-------	-------	10,261	136,873
Connecticut, Massachusetts, and New Jersey	1,507	23,211	1,118	10,730	17,201	174,970
Michigan and Wisconsin	-------	-------	-------	-------	7,493	117,068
	1,614	24,849	1,163	11,210	39,186	482,130

TABLE 5. - Production, sales, and stocks of crude coal tar at coal-gas plants in the United States in 1951, by States

	Produced (gallons)		Sold			On hand December 31 (gallons)
				Value		
	Total	Per ton of coal charged	Gallons	Total	Per gallon	
Alabama and North and South Carolina	479,984	12.87	400,155	$36,612	$.091	224,329
Colorado, Indiana, Iowa, and North Dakota	519,266	16.58	565,166	32,405	.057	19,087
Connecticut, Massachusetts, and New Jersey	1,688,501	13.89	1,844,037	127,282	.069	1,391,686
Michigan and Wisconsin	236,149	14.27	241,838	15,631	.065	35,460
	2,923,900	14.14	3,051,196	211,930	.069	1,670,562

Prepared by Maxine M. Otero, J. A. DeCarlo, and J. A. Corgan, Chief, Anthracite and Coke Sections, under the supervision of T. W. Hunter, Chief, Coal Branch, Fuels and Explosives Division

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FOR RELEASE JUNE 13, 1952

MINERAL MARKET REPORT
MMS. NO. 2081

THE ASBESTOS INDUSTRY IN 1951

Domestic production exceeded the high record of 1949 but amounted to only 6 percent of our domestic requirements, according to reports by producers to the Bureau of Mines, United States Department of the Interior. Major production is in Vermont. Moderate supplies of chrysotile, some of it of high quality spinning grade, were obtained in Arizona. Small sales of amphibole asbestos were reported from several States. Imports and apparent consumption as in 1950 exceeded all previous records. Imports from Canada again attained an all-time high. Imports of low-iron chrysotile from Southern Rhodesia, however, continued to decline, a condition which has created a critical situation with respect to this type of asbestos which is obtainable in quite limited quantities from other sources. South Africa supplied all of the amosite, and most of the crocidolite (blue asbestos) consumed in the United States.

Salient statistics for asbestos in 1950-51 are given in Table 1. World production of asbestos by countries, 1946-51, are given in Table 2.

Table 1. Salient statistics of the asbestos industry in the United States, 1950-51

	1950		1951	
	Short tons	Value	Short tons	Value
Domestic asbestos:				
Produced..................	41,358	(1/)	51,730	(1/)
Sold or used by producers..	42,434	$2,925,050	51,645	$3,912,500
Imports (unmanufactured).....	2/705,458	2/47,284,205	761,873	58,521,046
Exports (unmanufactured) 3/..	20,890	4,084,384	16,526	3,662,270
Apparent consumption 4/......	727,002	46,124,871	796,992	58,771,276
Exports of asbestos products5/	(1/)	8,147,141	(1/)	14,321,278

1/ Figure not available.
2/ Revised figure.
3/ 1950 figure revised to include material that has been imported and subsequently exported without change.
4/ 1950 figure revised due to change in basis of reporting. See footnote 3.
5/ See footnote 3. Also excludes value of "Magnesia and manufactures."

Prepared by Oliver Bowles and F. M. Barsigian under the supervision of [illegible]. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

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TABLE 2. - World production of asbestos by countries 1/, 1946 - 51, in metric tons

[Compiled by Helen L. Hunt]

Country 1/	1946	1947	1948	1949	1950	1951
Australia:						
New South Wales	241	290	330	284	2/380	3/400
South Australia	8	40	41	17	13	3/10
Western Australia	380	1,069	977	1,318	2/1,250	3/1,300
Bolivia (exports)	...	141	147	182	166	316
Brazil	1,214	2,631	1,304	1,415	(4)	(4)
Canada (sales) 5/	506,371	600,391	650,239	521,543	794,095	881,452
Chile	280	(4)	150	291	172	(4)
Cyprus	4,142	6,795	8,106	12,556	14,989	6/15,330
Egypt	65	1,015	1,625	117	260	1,247
Finland 7/	5,781	6,351	10,818	8,395	10,949	(4)
France	575	934	2/1,309	2/1,090	6,080	(4)
French Morocco	446	825	399	402	511	604
Greece	4	40	(4)	9	30	(4)
India	312	2/163	28	148	211	(4)
Italy	8,814	10,719	13,044	2/15,877	21,433	22,651
Japan	3,997	4,249	4,809	5,456	2/4,848	6,139
Kenya	165	582	510	716	229	396
Madagascar	1	(8)	(8)	2	1	(4)
New Zealand	...	...	...	...	42	(4)
Portugal	12	91	414	101	271	(4)
Southern Rhodesia	50,686	49,073	62,502	72,246	64,888	70,454
Spain	...	...	35	40	41	(4)
Swaziland	29,155	25,360	29,421	30,814	29,635	31,719
Switzerland	40	...	...	...	...	...
Turkey	55	36	203	170	245	(4)
Union of South Africa	18,348	27,344	41,490	64,334	79,298	97,401
United States (sold or used by producers)	12,769	21,804	33,649	39,360	38,495	46,851
Venezuela	65	240	192	192	190	260
Total (estimate) 2/	750,000	900,000	1,025,000	975,000	1,300,000	1,400,000

1/ In addition to countries listed asbestos is produced in Argentina, Bulgaria, China, Czechoslovakia, Indochina, Korea, Tasmania, and U. S. S. R. Estimates are included in total.

2/ Revised figure. 3/ Estimate.

4/ Data not available; estimate included in total.

5/ Exclusive of sand, gravel, and stone (waste rock only), production of which is reported as follows: 1946, 5,749 tons; 1947, 8,718 tons; 1948, 40,066 tons; 1949, 32,015 tons; 1950, 43,551 tons; 1951 data not available.

6/ Exports. 7/ Includes asbestos flour. 8/ Less than 0.5 ton.

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MINERAL MARKET REPORT
MMS NO. 2082.

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

MERCURY IN 1951

Consumption of 56,848 flasks of mercury, second only to the annual all-time peak established in 1945, was the outstanding feature of the mercury industry in 1951, according to the Bureau of Mines, United States Department of the Interior. Other features were the high though not record rate of imports, a reversal in the downtrend in domestic production that followed the 61-year peak of 1943, and the top annual price for all time.

Salient statistics of the mercury industry in the United States, 1942-46 (average) and 1947-1951, in flasks of 76 pounds

	1942-46 (average)	1947	1948	1949	1950	1951
Production----------------	39,315	23,244	14,388	9,930	4,535	7,293
Number of producing mines-----------------	110	37	20	23	16	47
Average price per flask, New York--------	$148.61	$83.74	$76.49	$79.46	$81.26	$210.13
Imports:						
General---------------	40,235	10,228	41,732	96,918	60,564	44,925
For consumption-------	37,762	13,008	31,951	103,141	56,080	47,860
Exports-----------------	685	884	526	577	447	241
Consumption--------------	48,216	35,581	46,253	39,857	49,215	56,848

Domestic production. - Production in the United States rose 61 percent in 1951 but this noteworthy increase was over the 100-year record-low quantity in 1950; output in 1951 was less than in any other year since 1922. The largest producers were the Mt. Diablo mine in Contra Costa County, the Juniper and New Idria (including San Carlos) mines in San Benito County, the New Almaden dumps in Santa Clara County, the Culver-Baer and Mt. Jackson (including Great Eastern) mines in Sonoma County, California; the Hermes mine, Valley County, Idaho; the Cordero mine in Humboldt County, Nevada; and the Bonanza mine, Douglas County, Oregon. These 9 properties accounted for 93 percent of the total for the United States.

Consumption and uses. - The record peacetime consumption in 1951 resulted chiefly from the putting into operation of a new chlorine and caustic soda plant late in the year at Saltville, Virginia. Except for chlorine and caustic soda manufacture, the agricultural use of mercury made the most spectacular gain in 1951; consumption for this use increased to 7,737 flask, or to 72 percent above 1950. Industrial and control instruments took 14 percent more than in 1950. Both uses consumed more mercury than in any other year in the period 1939 to date covered by detailed consumption data.

Prepared by Helena M. Meyer and Gertrude N. Greenspoon under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Most other mercury uses took less metal in 1951 than in 1950; pharmaceuticals and dental preparations showed drops of 54 and 45 percent, respectively; electrical apparatus took 15 percent less mercury than in 1950.

Four new chlorine and caustic soda plants using mercury cells were planned to into operation in the near future, at McIntosh and Muscle Shoals, Alabama, Calvert City, Kentucky, and Plymouth, North Carolina. In addition some currently operating plants were being enlarged.

Mercury consumed in the United States, 1947-1951, in flasks of 76 pounds

Use	1947	1948	1949	1950	1951
Pharmaceuticals	3,047	3,382	3,443	5,996	2,761
Dental preparations 1/	785	994	963	1,458	803
Fulminate for munitions and blasting caps	523	441	149	289	494
Agriculture	5,617	7,048	4,667	4,504	7,737
Antifouling paint	760	996	1,683	3,133	2,500
Electrolytic preparation of chlorine and caustic soda	693	806	755	1,309	1,543
Catalysts	5,078	3,262	2,520	2,743	2,635
Electrical apparatus 1/	6,763	6,471	7,323	12,049	10,250
Industrial and control instruments 1/	5,394	5,653	5,016	5,385	6,158
Amalgamation	138	143	165	192	154
General laboratory	333	442	345	646	524
Redistilled 1/	4,689	6,499	6,642	7,600	8,776
Other	1,761	10,116	6,186	3,911	12,513
Total	35,581	46,253	39,857	49,215	56,848

1/ A partial break-down of the "redistilled" classification showed 48 percent was for instruments, 9 percent for dental preparations, and 34 percent for electrical apparatus in 1951, compared with a range of 53 to 51, 16 to 10, and 22 to 16, respectively, in the four-year period 1947-50.

Stocks. - Above-normal stocks of 35,619 flasks at the beginning of 1951 were reduced to 30,172 flasks by the end of the year, an anticipated drop, owing chiefly to the withdrawal of metal held for the Saltville plant installation. The inventorie continued to be greater than customary, however, because before the year ended metal was being accumulated for further new installations to come into operation in 1952 or later. Noteworthy quantities of mercury are held in the National Stockpile, but data on such quantities may not be disclosed.

Stocks of mercury in hands of producers and consumers and dealers, 1947-51, in flasks of 76 pounds

End of year	Producers 1/	Consumers and dealers	Total
1947	3,084	16,200	19,284
1948	5,165	25,000	30,165
1949	5,354	15,600	20,954
1950	2,719	32,900	35,619
1951	1,072	29,100	30,172

1/ Operators that account for roughly 95 percent of output.

Prices. - A sharp uptrend in prices was in progress at the beginning of the year when the range in quotations was from $150 to $153 a flask. The upward movement continued until the range reached $225-$227 for the week ending January 24; prices thereafter generally tended to decline until the latter part of August when the price range was $195-$200. After August the price moved upward to an average of $216.96 in October, following which another decline began and the year's closing quotations were $212-$215 a flask.

Monthly prices per flask (76 pounds) of mercury at New York 1/, 1947-51

	1947	1948	1949	1950	1951
January	$88.00	$78.31	$89.60	$71.00	$195.00
February	86.86	76.41	88.09	71.00	215.27
March	86.85	76.00	87.30	71.00	217.33
April	85.77	75.46	84.65	71.00	215.60
May	84.46	74.16	82.20	70.35	212.92
June	84.00	76.00	80.27	70.00	210.00
July	84.00	75.42	78.16	73.44	206.80
August	84.00	75.00	74.56	78.00	195.85
September	81.64	75.04	72.80	84.20	206.25
October	80.69	76.00	73.00	89.52	216.96
November	79.64	77.91	71.87	99.35	216.30
December	79.00	82.15	71.00	126.24	213.20
Average	83.74	76.49	79.46	81.26	210.13

1/ Engineering and Mining Journal, New York.

Foreign trade. - General imports of mercury were 44,925 flasks, or 26 percent less than in 1950 but except for 1943, 1945 and 1949, were higher than all other earlier years. Noteworthy expansion in demand for chlorine for defense purposes was a factor in the maintenance of large imports of metal in 1951.

Mercury imported into the United States in 1947-51, by countries, in flasks (general imports)

	1947	1948	1949	1950	1951
Bolivia	----	----	----	----	19
Canada and Newfoundland	----	----	29	107	660
Chile	120	----	----	----	----
Denmark	----	----	----	300	----
Germany	----	----	----	----	250
Honduras	----	----	----	----	10
Italy	1,516	4,994	84,628	18,073	17,633
Japan	3,107	3,746	2,777	793	250
Mexico	1,824	4,063	3,506	3,986	4,988
Netherlands	----	----	----	825	----
Spain	2,161	27,114	2,225	29,439	13,608
Sweden	----	75	----	1,061	780
Switzerland	----	----	----	----	204
Yugoslavia	1,500	1,691	3,753	5,980	6,523
United Kingdom	----	49	----	----	----
	10,228	41,732	96,918	60,564	44,925

Exports of mercury declined 46 percent in 1951, continuing the downtrend in progress since 1945 in this regularly small quantity item. Exports were equivalent to less than 1 percent of imports in 1951. Reexports, also small regularly, dropped 24 percent; marking a continuation of the decrease since 1947.

Mercury exported and reexported from the United States, 1947-51, in flasks

	Exports	Reexports
1947	884	3,095
1948	526	921
1949	577	828
1950	447	886
1951	241	675

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Prepared 6/17/52

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MINERAL MARKET REPORT
MMS No. 2083

POTASH INDUSTRY IN THE UNITED STATES IN 1951

The domestic output of marketable potash salts in 1951 again set a new record with 2,474,870 short tons (1,420,323 tons K_2O) according to reports by producers to the Bureau of Mines, United States Department of the Interior. This was a 10 percent increase above the 1950 production. Sales were 2,451,913 tons (1,408,408 tons K_2O) valued at $44,788,880. Stocks in producers' hands at the end of 1951 were 62,597 tons. Potash materials exported in 1951 rose 6 percent in quantity and 37 percent in value over 1950 with both fertilizer and chemical grades showing increases. Total imports of potash salts increased more than 50 percent in 1951 over 1950, rising from 381,490 short tons (200,529 tons K_2O) in 1950, to 574,361 tons (313,454 tons K_2O) in 1951, the highest reported since 1938. The apparent consumption of potash in terms of approximate K_2O content was 1,653,188 tons, a 17 percent increase over 1950.

The production of both grades of muriate of potash (60-62 percent K_2O minimum and 48-50 percent K_2O minimum) increased in 1951 over 1950. Production of the higher-grade muriate rose 10 percent to a new high of 2,047,793 tons. Production of manure salts dropped to 19,775 tons. The combined production of sulfate of potash and sulfate of potash-magnesia increased 13 percent in 1951 as compared with 1950, to a total of 251,505 tons.

The states of California, New Mexico and Utah supplied nearly all of the reported potash production with over 95 percent of the total coming from the Permian deposits of Southeastern New Mexico. A fourth company in the Carlsbad area, The Duval Sulphur and Potash Company began production late in 1951.

Prepared by E. Robert Ruhlman and Gertrude E. Tucker, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division. June 18, 1952.

Salient statistics of the potash industry in the United States, 1949-51

	1949	1950	1951
Production of potassium salts (marketable)..............short tons..	2,056,609	1/ 2,242,647	2,474,870
Approximate equivalent K_2O.....do...	1,118,395	1/ 1,287,724	1,420,323
Sales of potassium salts by producers.........................do...	2,062,789	1/ 2,221,920	2,451,913
Approximate equivalent K_2O.....do...	1,120,653	1/ 1,276,164	1,408,408
Value at plant......................	$35,105,799	1/ $39,774,447	$44,788,880
Average per ton..................	$17.02	1/ $17.90	$18.27
Imports of potash materials..................short tons..	43,719	1/ 381,490	574,361
Approximate equivalent K_2O.....do...	19,216	1/ 200,529	313,454
Value..............................	$2,358,557	1/ $13,993,974	$18,543,112
Exports of potash materials..................short tons..	126,757	117,137	124,251
Approximate equivalent K_2O 2/..do...	69,558	65,047	68,674
Value..............................	$7,110,835	1/ $5,534,176	$7,601,646
Apparent consumption of potassium salts 3/..................short tons..	1,979,751	1/ 2,486,273	2,902,023
Approximate equivalent K_2O.....do...	1,070,311	1/ 1,411,646	1,653,188

1/ Revised figures.
2/ Estimate by Bureau of Mines.
3/ Quantity sold by producers, plus imports, minus exports.

Potassium salts produced in the United States, 1949-51, by grades, in short tons

Grade	1949	1950	1951
Muriate of potash:			
60-62 percent K_2O minimum 1/..........	1,513,128	2/ 1,846,459	2,047,793
48-50 percent K_2O minimum..............	172,475	151,547	155,797
Manure salts............................	177,315	21,532	19,775
Sulfate of potash and sulfate of potash-magnesia..............................	193,691	223,109	251,505
Total............................	2,056,609	2/ 2,242,647	2,474,870

1/ Includes refined potash and some 93-96 percent KCl.
2/ Revised figure.

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MINERAL MARKET REPORT
MMS NO. 2084

TIN CONSUMED IN THE MANUFACTURE OF TIN PLATE AND TERNEPLATE IN 1951

Tin consumed in the manufacture of tin plate and terneplate decreased 14 percent in 1951, according to the Bureau of Mines, United States Department of the Interior. Total consumption of tin by this industry (including plant losses) was 32,172 long tons in 1951 compared with 37,408 tons in 1950. Tin mills operated at a lower rate in 1951 and produced 4 percent less tin plate than in the peak year 1950.

About 61 percent of the tin used to make tin plate in 1951 was for hot-dipped and 39 percent for electrolytic. Hot-dipped tin plate production, however, accounted for only 35 percent and electrolytic 65 percent of the total output in 1951. Electrolytic tin plate requires considerably less tin per unit of product than hot-dipped. Electrolytic lines established a new annual record in 1951 and produced 5 percent more tin plate than in 1950. Hot-dipped tin plate production declined 16 percent and was the smallest tonnage recorded since 1932. Terneplate production required 20 percent less tin in 1951 than in 1950. Short terne output decreased 14 percent, whereas long ternes increased 3 percent.

The use of pig tin for making tin plate and terneplate was limited by NPA Order M-8, which also permitted the use of tin for tin plate and terneplate in accordance with the provisions of NPA Order M-24. M-24 controlled the uses of tin plate and terneplate (for cans M-25, and closures M-26); the permitted materials in those uses, and the maximum permitted coatings of tin or terne metal. Effective July 1, 1951, tin plate and terneplate became subject to allotments under the Controlled Materials Plan (CMP).

The following summary of tin consumption by firms producing tin plate and terneplate in 1950 and 1951 is released in advance of a final report now in preparation by the Bureau of Mines:

Prepared June 27, 1952 by Abbott Renick and John B. Umhau under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division

SUMMARY

	1950 Long tons	1951 Long tons
Total tin on hand January 1	13,485	19,836
Net receipts during year	44,664	23,435
Supply available	58,149	43,271
Minus tin on hand December 31	19,836	10,269
Total tin processed during year	38,313	33,002
Minus tin content of scrap shipped from plants.	905	830
Total tin consumed in manufacturing	37,408	32,172
Deduct plant losses	775	742
Tin content of manufactured products	36,633	31,430
Tin plate	35,380	30,522
Terneplate	952	767
Other products	301	141

RECEIPTS - The tin and terneplate industry acquired the following quantities of tin for its requirements, in long tons:

	1950	1951
Virgin pig tin	43,667	22,841
Tin in terne metal	997	594
Total	44,664	23,435

The principal brand acquired by the industry in 1950 was Longhorn, amounting to 36 percent of the total receipts of pig tin. Straits, accounted for 28 percent. Other brands included Dutch, 15 percent, Belgian, 12 percent, and English and miscellaneous the remaining 9 percent.

STOCKS - Tin and terneplate plant stocks decreased 48 percent in 1951. Tin on hand at end of 1949, 1950, and 1951 was in the following forms, in long tons:

Raw material	1949	1950	1951
Virgin pig tin	9,300	15,116	5,631
Tin in terne metal	85	222	110
Tin in plant scrap	276	257	252
Tin in process	3,824	4,241	4,276
Total	13,485	19,836	10,269

In addition to plant stocks the industry reported 924 long tons of pig tin in warehouses and in transit in the United States at the end of 1951.

PRODUCTS MANUFACTURED AT TIN-PLATE AND TERNEPLATE PLANTS - In addition to the tin used in the manufacture of tin plate and terneplate, 141 long tons (301 in 1950) were used in 1951 for all other purposes, such as tinned articles, bronze and babbitt. Quantities used for tin plate and terneplate are shown in the following tables:

Tin content of tin plate, waste-waste, strips, cobbles, etc., produced in the United States, 1950 and 1951

Product	Quantity manufactured short tons		Tin content			
			Total long tons		Pounds per short tons of tin plate	
	1950	1951	1950	1951	1950	1951
Tin plate						
Hot-dipped............	1,845,009	1,557,006	21,875	17,789	26.6	25.6
Electrolytic..........	2,693,777	2,832,044	12,110	11,595	10.1	9.2
Total tin plate........	4,538,786	4,389,050	33,985	29,384	16.8	15.0
Waste-waste, strips cobbles (etc.).......	228,488	202,381	1,395	1,138	13.7	12.6
Grand total.......	4,767,274	4,591,431	35,380	30,522	16.6	14.9

Tin content of terneplate produced in the United States, 1950 and 1951

Product	Quantity manufactured short tons		Tin content (long tons)		Pounds of tin per short ton of terneplate	
	1950	1951	1950	1951	1950	1951
Short ternes..........	60,952	52,614	188	201	6.9	8.6
Long ternes...........	209,223	216,069	753	555	8.1	5.8
Waste-waste...........	4,788	4,561	11	11	5.0	5.1
Total..............	274,963	273,244	1/ 952	2/ 767	7.8	6.3

1/ Total includes 349 long tons of pig tin and 603 long tons in terne metal.
2/ Total includes 65 long tons purchased as pig tin and 702 long tons as terne metal.

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MINERAL MARKET REPORTS
M.M.S. NO. 2085

ASPHALT SALES INCREASE 11 PERCENT IN 1951

Total indicated demand, domestic and foreign, for petroleum asphalt was 13 percent higher in 1951 than in 1950, according to the Bureau of Mines, Department of the Interior. Because of greater demand, petroleum refineries enlarged their output 14 percent; and imports of petroleum asphalt, lake asphalt, and grahamite were increased 36 percent. These imports, however, made up less than 4 percent of the total new supply available during 1951. Stocks of asphalt held at the refineries increased 25 percent during 1951, compared with an 8-percent increase during 1950. Recorded domestic sales of asphalt by petroleum refineries were 11 percent larger in 1951 than in 1950.

Petroleum refineries in the United States in 1951 produced 12,055,500 short tons of asphalt; received 786,500 tons by transfers, imports, purchases, and blending of other products; increased their stocks from 962,400 tons at the beginning of the year to 1,203,600 tons at the end of the year; consumed, transferred, exported directly, and lost in processing 892,700 tons; and sold to domestic consumers 11,708,100 tons at a value of $216,208,700 f.o.b. refinery. In 1950 they produced 10,589,100 tons; received from other sources 909,400 tons; increased stocks from 894,200 tons at the beginning of the year to 962,400 tons at the end of the year; consumed, transferred, exported directly, and lost in processing 901,900 tons; and sold to domestic consumers 10,528,400 tons valued at $177,563,600.

Of the total petroleum asphalt sold to domestic consumers, 27 percent in 1951 was manufactured from foreign petroleum (imported not only from Venezuela, Colombia, and Mexico, but also from the Persian Gulf), compared with 25 percent in 1950. Ninety-seven percent of the asphalt made from foreign petroleum in 1951 was manufactured in refineries of the East Coast of the United States, compared with 94 percent in 1950.

Highway and street construction used (in the form of paving asphalt, paving flux, cut-back asphalts, and asphalt emulsions) 72 percent of the total asphalt sold to domestic consumers by petroleum refineries in 1951 compared with 66 percent (revised figure) in 1950. While statistics of street and highway surfacing and maintenance in the United States are incomplete, activity in this field of construction was evidently higher in 1951 than in 1950. Sales of paving asphalt for high-type surfacing increased 25 percent in tonnage; and sales of cut-back asphalts were 11.5 percent higher in 1951 than in 1950. If sales of asphalt emulsions by secondary manufacturers are added to refinery sales, emulsion sales increased 75 percent in quantity -- from 104,300 gallons (444,441 tons) in 1950

Prepared by A. H. Redfield and Willa D. Granacher, International Trade Unit, Petroleum Economics Branch.

to 188,309,592 gallons (797,922 tons) in 1951, and 73 percent in value -- from $11,764,320 in 1950 to $20,243,501 in 1951.

Roofing manufacture made the second-largest demand for asphalt, absorbing 27 percent of the total sales of asphalt in 1950, and 25 percent in 1951. Sales of roofing asphalt and roofing flux combined were 4 percent larger in 1951 than in 1950.

Bituminous rock shared in the increased demand which raised sales of paving asphalt. Its sales increased in quantity from 1,184,676 short tons in 1950 to 1,378,434 tons in 1951 and in value from $3,522,308 in 1950 to $4,159,259 in 1951.

A slightly smaller tonnage of gilsonite was sold in 1951 than in 1950; but prices were somewhat higher. Sales by producers in northeastern Utah decreased from 66,186 tons in 1950 to 65,521 tons in 1951, but increased in value from $1,774,330 in 1950 to $1,895,374 in 1951.

Imports of petroleum asphalt totaled 442,572 short tons valued at $5,294,024 in 1951 compared with 323,571 tons valued at $3,480,998 in 1950. The Netherlands Antilles were almost the sole source of these imports in 1950 and the principal source in 1951. Imports of natural asphalt, chiefly of lake asphalt from Trinidad, increased from 5,863 tons valued at $136,003 in 1950 to 5,629 tons valued at $112,007 in 1951.

Exports of petroleum asphalt increased from 143,625 tons (revised figure) valued at $4,519,641 (revised figure) in 1950 to 183,245 tons valued at $6,391,462 in 1951. Larger shipments to South America (notably Brazil), to Europe (especially France), to Asia (principally to Indo-China, India, the Philippine Islands, and Thailand), to the Union of South Africa, and to New Zealand accounted for the increase.

Exports of natural asphalt, unmanufactured, increased from 18,421 short tons (revised figure) valued at $910,910 (revised figure) in 1950 to 24,918 tons valued at $1,277,783 in 1951. Of the 1951 exports, 77 percent went to western Europe, notably to the United Kingdom, France, and western Germany.

Petroleum refineries in the United States produced 6,084 barrels of liquid asphaltic road oil in 1951; received 1,579,000 barrels chiefly in inter-refinery transfers and transfers from stocks not previously classified as road oil; increased their stocks from 397,000 barrels at the beginning of the year to 402,000 barrels at the end of the year; consumed, transferred to other stocks, and lost in processing 1,164,000 barrels, and sold to consumers 6,494,000 barrels valued at $16,506,000. In 1950 they produced 6,928,000 barrels of road oil, received 1,393,000 barrels chiefly in inter-refinery transfers and transfers from other stocks, increased their stocks from 366,000 barrels at the beginning of the year to 397,000 barrels at the end of the year; consumed, transferred to other stocks, and lost in processing 964,000 barrels; and sold to consumers 7,326,000 barrels valued at $16,876,000.

Asphalt and Asphaltic Material (Exclusive of Road Oil) Sold at Petroleum Refineries to Domestic Consumers
in the United States in 1951, By Varieties (Preliminary)
(Short tons)

	East Coast	Appala-chian	Indiana Illinois Kentucky	Oklahoma Kansas Missouri	Texas	Louisiana and Arkansas	Rocky Mountain	California	Total Short Tons	Total Value
Solid and semisolid products of less than 200 penetration:										
Asphalt for --										
Paving	1,479,792	142,642	471,627	237,799	350,547	566,845	204,876	676,362	4,130,490	$74,179,069
Roofing	868,402	118,110	391,708	82,504	197,454	200,964	7,684	213,335	2,080,161	38,517,268
Waterproofing	17,005	2,084	19,951	17,936	10,327	20,039	441	34,429	122,212	2,678,996
Blending with rubber	10,891	1,560	171	2,960	---	901	1,268	3,663	21,414	556,144
Briquetting	18,331	1,618	96,620	77,151	---	---	11,057	5,546	210,323	3,674,981
Mastic and mastic cake	1,790	121	126	---	---	---	---	---	2,037	48,645
Pipe coatings	2,472	2,405	562	2,836	491	2,768	168	14,571	26,273	682,044
Moulding compounds	12,996	1,856	2,202	870	5,674	2,652	9,450	3,168	38,868	809,577
Miscellaneous uses	232,772	1,388	66,523	61,788	2,561	23,119	8,375	13,797	410,323	8,705,101
Total	2,644,451	271,784	1,049,490	483,844	567,054	817,288	243,319	964,871	7,042,101	$129,851,825
Semisolid and liquid products of more than 200 penetration:										
Flux for --										
Paving	43,906	1,590	31,864	43,509	145,965	65,319	14,013	97,456	443,622	$6,525,524
Roofing	60,626	24,970	381,574	168,898	18,792	28,435	148	198,840	882,283	13,446,019
Waterproofing	432	---	2,807	1,039	---	---	326	1,432	6,036	167,425
Mastic	---	---	---	---	11,002	2,400	---	1,069	14,471	435,282
Cut-back asphalts:										
Rapid-curing	395,418	58,484	207,352	95,395	475,867	79,229	79,442	87,531	1,478,718	29,359,207
Medium-curing	242,749	14,480	241,357	306,266	120,225	90,606	162,293	311,870	1,489,846	28,411,987
Emulsified asphalts and fluxes	80,120	4,731	8,877	12,115	17,911	6,803	2,020	83,670	216,247	4,672,705
Paints, enamels, japans, and lacquers	21,174	31,882	11,691	837	2,318	---	---	1,705	69,607	2,035,473
Other liquid products	3,676	---	19,982	12,026	2,326	11,103	15,729	304	65,146	1,303,211
Total	848,101	136,137	905,504	640,085	794,406	283,895	273,971	783,877	4,665,976	$86,356,833
Grand total short tons	3,492,552	407,921	1,954,994	1,123,929	1,361,460	1,101,183	517,290	1,748,748	11,708,077	---
Grand total value	$70,569,180	9,029,274	37,807,256	18,179,307	23,359,078	18,853,890	7,657,617	30,753,056	---	$216,208,658

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MINERAL MARKET REPORTS

M.M.S. NO. 2085

ASPHALT SALES INCREASE 11 PER CENT IN 1951

ERRATA

Please make the following substitutions in the copy of the Mineral Market Reports No. 2085 which you now have.

Page 1, 4th paragraph, 2nd line:
Substitute 71 per cent for "72 per cent."

Page 1, 4th paragraph, last line:
Substitute 80 per cent for "75 per cent."
Substitute 104,710,300 gallons for "104,300 gallons."

Page 2, 4th paragraph, last line:
Substitute 6,304 tons for "5,629 tons."

Page 2, last paragraph, 1st line:
Substitute 6,084,000 barrels (revised figure) for "6,084 barrels."

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MINERAL MARKET REPORT
M.M.S. NO. 2086

COKE AND COAL CHEMICALS IN 1951 1/

A new all-time peak in coke production in the United States was attained in 1951, according to data submitted by coke producers to the Bureau of Mines, United States Department of the Interior. A total of 79,330,702 net tons of coke, excluding breeze, was produced which represented a gain of 9 percent over the 1950 output and exceeded the previous maximum of 1948 by 4,468,774 tons. This record was made possible by the efficient coordination of labor and management in the mining, transportation, steel, and other basic industries which permitted coke producers to maintain extremely high-operating rates throughout the year. Slot-type coke ovens operated at the second highest production rate on record - 96.5 percent of capacity, compared with the all-time peak rate of 96.9 percent during 1942, the first year of World War II. Beehive-coke production, the highest since 1943, declined slightly in the latter months of the year from the high rate in January and was 9 percent of the total coke production.

One of the major problems that confronted the coke industry in 1951 was providing sufficient coal-carbonizing capacity to support the double burden of the accelerated general industrial activity and the National defense program. A total of 696 new slot-type coke ovens with a designed annual coke capacity of 3,869,100 tons was completed while 359 ovens, having an annual coke capacity of 1,709,100 tons, were taken out of production. Most of the 359 ovens were shut down for rebuilding although one coke plant with 42 ovens closed permanently and several batteries at other plants were completely demolished. Although the difference between capacity of the new ovens completed and old ovens taken out of production was 2,160,000, the net gain in potential capacity during the year was only 1,740,200 tons. This was due to slowing down the coking cycles for the older ovens during the year. As shown in table 11, 52 percent of all slot-type coke ovens in existence on December 31, 1951, were at least 20 years old. Many of these ovens were reported to be in poor physical condition and coke producers were faced with the difficult task of maintaining existing capacity as well as constructing additional ovens to support the expansion in the iron and steel industry. In an effort to meet the planned expansion goal for coke capacity, the industry had 1446 new ovens with a designed annual coke capacity of 8,134,500 tons under construction on December 31, 1951, and contracts for a number of additional batteries were pending. However, all of the new construction will not represent additional capacity as a large part will actually be replacement of badly deteriorated ovens.

Production of basic chemical raw materials, which generally parallels oven-coke output, also reached new peaks in 1951. Increases of 8 percent, 9 percent, and 8 percent over 1950 were registered by ammonia (all forms), crude light oil, and tar, respectively. These gains resulted in corresponding increases in the output of derivatives as follows: benzol (chemical grades), 12 percent; toluol (all grades), 12 percent; xylol, 13 percent; naphthalene, 31 percent; creosote oil, 14 percent; crude chemical oil, 41 percent; refined pyridine, 26 percent; ammonium sulfate, 8 percent; and ammonia liquor, 6 percent. In spite of the gains in output of benzol and naphthalene, requirements exceeded production from domestic sources and considerable quantities of these commodities were imported from abroad. Although the supply of virtually all of the principal coal chemicals was limited, they were not placed under allocation control and only directive actions were taken from time to time on some of the scarcer commodities, particularly toluol for use in explosives and benzol to fill in spot shortages where urgent need arose. Benzol, toluol, and naphthalene were, however, under priority Regulation No. 1, governing inventory control.

1/ Advance statistical summary containing final figures that will be included in a chapter of Minerals Yearbook 1951, for distribution to the regular mailing list.

TABLE 1. - Salient statistics of the coke industry in the United States, 1937 and 1950-51

	1937	1950	1951
Coke production:			
Oven — net tons	49,210,748	66,890,618	71,987,172
Beehive — do	3,164,721	5,827,420	7,343,530
Total — do	52,375,469	72,718,038	79,330,702
Percent oven	94.0	92.0	90.7
Producers' stocks of coke, end of year - net tons	2,595,287	1,110,714	1,482,972
Exports, all coke — do	526,683	397,846	1,026,730
Imports, all coke — do	286,364	437,585	161,639
Apparent consumption, all coke — do	51,271,929	73,416,519	78,093,353
Disposal, all coke sold or used:			
Blast furnace — do	36,751,969	60,918,549	67,440,987
Foundry — do	2,038,822	3,523,396	3,805,686
Other industrial (including producer and water gas) — do	4,597,894	6,366,497	5,603,262
Domestic — do	8,107,518	2,565,176	2,087,934
Receipts per ton of coke sold (merchant sales):			
Blast furnace	$4.22	$13.95	$14.99
Foundry	$7.91	$19.78	$21.81
Water gas	$6.25	$15.02	$15.73
Other industrial	$5.48	$13.55	$14.09
Domestic	$6.43	$13.59	$14.43
Coal-chemical materials produced:			
Tar — gallons	603,053,288	739,868,767	795,311,283
Ammonium sulfate or equivalent — pounds	1,506,431,251	1,849,127,582	1,995,546,999
Gas — M cubic feet	757,628,942	979,592,988	1,052,280,603
Burned in coking process — percent	37.04	36.81	36.19
Surplus sold or used — do	61.12	61.54	62.09
Wasted — do	1.84	1.65	1.72
Crude light oil — gallons	187,054,346	260,856,875	284,496,933
Yield of coal-chemical materials per ton of coal:			
Tar — gallons	8.67	7.79	7.78
Ammonium sulfate or equivalent — pounds	21.84	19.89	19.82
Gas — M cubic feet	10.89	10.32	10.29
Crude light oil — gallons	2.86	2.81	2.83
Value of coal-chemical materials sold:			
Tar	$18,456,483	$37,558,999	$43,546,155
Ammonia (sulfate and liquor)	$16,048,325	$31,322,588	$36,032,105
Gas (surplus)	$72,961,697	$132,247,656	$138,300,299
Crude light oil and derivatives	$20,215,404	$53,819,463	$78,024,932
Other coal-chemical materials 1/	$4,442,929	$19,421,444	$28,030,868
Total value of all products 2/	$411,706,484	$1,278,625,062	$1,474,393,202

1/ Naphthalene, tar derivatives, intermediate light oil, and miscellaneous materials. 2/ Includes value of coke and breeze produced and tar used as fuel by producers.

TABLE 2. - Statistical summary of the coke industry in the United States in 1951

	Slot-type ovens	Beehive ovens	Total
Coke produced -			
At merchant plants:			
Net tons	13,190,550	(2)	(2)
Value	$218,174,099		
At furnace plants: 1/			
Net tons	58,796,622		
Value	$798,891,452		
Total:			
Net tons	71,987,172	7,343,530	79,330,702
Value	$1,017,065,551	$102,408,135	$1,119,473,686
Breeze produced:			
Net tons	5,125,834	87,653	5,213,487
Value	$19,832,315	$212,956	$20,045,271
Coal charged into ovens:			
Bituminous:			
Net tons	102,030,281	11,418,465	113,448,746
Value	$912,183,681	$70,212,117	$982,395,798
Average per ton	$8.94	$6.15	$8.66
Anthracite:			
Net tons	237,136	-----------	237,136
Value	$1,959,021	-----------	$1,959,021
Average per ton	$8.26	-----------	$8.26
Total:			
Net tons	102,267,417	11,418,465	113,685,882
Value	$914,142,702	$70,212,117	$984,354,819
Average per ton	$8.94	$6.15	$8.66
Average yield in percent of total coal charged:			
Coke	70.39	64.31	69.78
Breeze (at plants actually recovering)	5.01	2.47	4.93
Ovens:			
In existence January 1	14,982	17,708	32,690
In existence December 31	15,319	20,458	35,777
Dismantled during year	359	51	410
In course of construction December 31	1,446	398	1,844
Annual coke capacity December 31 ----- net tons	74,228,400	13,858,900	88,087,300
Coke used by producers -			
In blast furnaces:			
Net tons	44,629,127	370,732	44,999,859
Value	$595,477,226	$5,675,482	$601,152,708
In foundries:			
Net tons	59,397	-----------	59,397
Value	$967,508	-----------	$967,508
To make producer gas:			
Net tons	578,284	-----------	578,284
Value	$7,457,643	-----------	$7,457,643
To make water gas:			
Net tons	1,028,521	-----------	1,028,521
Value	$11,849,194	-----------	$11,849,194
For other purposes:			
Net tons	339,018	1,579	340,597
Value	$4,383,451	$22,632	$4,406,083
Coke sold -			
To financially affiliated companies -			
For blast-furnace use:			
Net tons	11,256,984	1,771,379	13,028,363
Value	$159,093,772	$22,203,458	$181,297,230
For foundry use:			
Net tons	57,665	-----------	57,665
Value	$1,093,956	-----------	$1,093,956
For manufacture of water gas:			
Net tons	663,144	-----------	663,144
Value	$10,056,072	-----------	$10,056,072
For other purposes:			
Net tons	301,363	5	301,368
Value	$4,907,142	$77	$4,907,219
To other consumers -			
For blast-furnace use:			
Net tons	5,139,935	4,272,830	9,412,765
Value	$80,403,499	$60,689,574	$141,093,073
For foundry use:			
Net tons	3,460,528	228,096	3,688,624
Value	$76,778,633	$3,667,223	$80,445,856
For manufacture of water gas:			
Net tons	516,005	114,473	630,478
Value	$8,162,062	$1,756,735	$9,918,797
For other industrial use:			
Net tons	1,505,695	555,175	2,060,870
Value	$21,040,653	$7,998,344	$29,038,997
For domestic use:			
Net tons	2,060,697	27,237	2,087,934
Value	$29,770,954	$354,701	$30,125,655

(Continued on next page)

TABLE 2. - Statistical summary of the coke industry in the United States in 1951 (Continued)

	Slot-type ovens	Beehive ovens	Total
Disposal of breeze:			
Used by producers -			
For steam raising:			
Net tons	3,228,179	3,453	3,231,632
Value	$11,446,224	$4,987	$11,451,211
To make producer or water gas:			
Net tons	118,878	----------	118,878
Value	$640,024	----------	$640,024
For other purposes:			
Net tons	855,351	11	855,362
Value	$2,926,768	(3)	$2,926,768
Sold:			
Net tons	1,237,788	75,652	1,313,440
Value	$5,800,200	$233,130	$6,033,330
Average receipts per ton sold (merchant sales):			
Blast-furnace coke	$15.64	$14.20	$14.99
Foundry coke	$22.19	$16.08	$21.81
Water-gas coke	$15.82	$15.35	$15.73
Other industrial coke	$13.97	$14.41	$14.09
Domestic coke	$14.45	$13.02	$14.43
Breeze	$4.69	$3.08	$4.59
Producers' stocks on January 1, 1952:			
Blast-furnace coke net tons	1,011,989	14,129	1,026,118
Foundry coke do	16,140	1,344	17,484
Domestic and other coke do	439,270	100	439,370
Breeze do	820,892	5,413	826,305

1/ Plants associated with iron blast furnaces. 2/ Not separately recorded. 3/ Included with value of breeze sold to avoid disclosure of individual operations.

Table 3. - Coke produced, value, number of ovens, coal charged, and average yield in the United States in 1951 by States

State	Oven coke						
	Plants	Ovens	Coal charged (net tons)	Yield of coke from coal (percent)	Coke produced (net tons)	Value of coke at ovens	
						Total	Per ton
Alabama	7	1,340	8,756,422	71.85	6,291,280	$75,124,573	$11.94
California	1	135	924,537	61.46	568,216	(1)	(1)
Colorado	1	266	1,452,062	68.55	995,332	(1)	(1)
Illinois	8	900	5,214,085	70.69	3,685,662	62,052,609	16.84
Indiana	5	1,955	12,320,739	71.78	8,843,452	156,205,401	17.66
Maryland	1	551	3,955,067	72.19	2,855,209	(1)	(1)
Massachusetts	1	204	1,561,541	71.01	1,108,826	(1)	(1)
Michigan	4	584	4,001,353	72.98	2,920,082	44,321,098	15.18
Minnesota	3	240	1,338,937	72.59	971,913	16,143,039	16.51
New Jersey	2	341	2,124,486	72.44	1,538,953	(1)	(1)
New York	7	1,115	8,095,523	69.31	5,610,975	80,327,062	14.32
Ohio	15	2,285	15,858,101	70.32	11,151,201	146,140,699	13.11
Pennsylvania	13	3,710	25,127,515	68.65	17,250,217	220,910,330	12.81
Tennessee	1	44	322,037	77.84	250,658	(1)	(1)
Texas	2	125	1,041,766	72.51	755,418	(1)	(1)
Utah	2	308	1,934,422	63.41	1,226,536	(1)	(1)
West Virginia	5	705	5,366,963	71.36	3,829,879	44,416,343	11.60
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	5	511	2,871,861	74.28	2,133,363	34,211,525	16.04
Undistributed	----	------	----------	------	----------	137,212,372	14.76
Total 1951	83	15,319	102,267,417	70.39	71,987,172	1,017,065,551	14.13
At merchant plants	27	2,958	18,322,799	71.99	13,190,550	218,174,099	16.54
At furnace plants	56	12,361	83,944,618	70.04	58,796,622	798,891,452	13.59
Total 1950	84	14,982	94,926,310	70.47	66,890,618	899,667,327	13.45

State	Beehive coke						Total	
	Ovens	Coal charged (net tons)	Yield of coke from coal (percent)	Coke produced (net tons)	Value of coke at ovens		Coke produced (net tons)	Value of coke at ovens
					Total	Per ton		
Alabama	------	----------	-------	---------	-----------	-----	6,291,280	$75,124,573
California	------	----------	-------	---------	-----------	-----	568,216	(1)
Colorado	20	1,300	55.08	716	(1)	(1)	996,048	(1)
Illinois	------	----------	-------	---------	-----------	-----	3,685,662	62,052,609
Indiana	------	----------	-------	---------	-----------	-----	8,843,452	156,205,401
Maryland	------	----------	-------	---------	-----------	-----	2,855,209	(1)
Massachusetts	------	----------	-------	---------	-----------	-----	1,108,826	(1)
Michigan	------	----------	-------	---------	-----------	-----	2,920,082	44,321,098
Minnesota	------	----------	-------	---------	-----------	-----	971,913	16,143,039
New Jersey	------	----------	-------	---------	-----------	-----	1,538,953	(1)
New York	------	----------	-------	---------	-----------	-----	5,610,975	80,327,062
Ohio	------	----------	-------	---------	-----------	-----	11,151,201	146,140,699
Pennsylvania	17,596	9,872,414	64.79	6,396,480	$87,877,904	$13.74	23,646,697	308,788,234
Tennessee	90	3,440	47.62	1,638	(1)	(1)	252,296	(1)
Texas	------	----------	-------	---------	-----------	-----	755,418	(1)
Utah	797	183,830	55.31	101,672	(1)	(1)	1,328,208	(1)
Virginia	748	492,062	58.35	287,116	4,453,445	15.51	287,116	4,453,445
West Virginia	1,012	686,230	62.98	432,155	6,407,259	14.33	4,262,034	50,823,602
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	195	179,189	69.06	123,753	(1)	(1)	2,257,116	(1)
Undistributed	------	----------	-------	---------	3,669,527	16.11	----------	175,093,924
Total 1951	20,458	11,418,465	64.31	7,343,530	102,408,135	13.95	79,330,702	1,119,473,686
Total 1950	17,708	9,088,385	64.12	5,827,420	77,235,875	13.25	72,718,038	976,903,202

1/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 4. - Coke produced in the United States, 1937 and 1948-51, by States, in net tons

State	1937	1948	1949	1950	1951
Oven coke:					
Alabama	4,259,771	6,015,460	5,161,397	5,833,142	6,291,280
California	---------	296,749	346,552	512,790	568,216
Colorado	486,945	976,504	729,516	804,979	995,332
Illinois	2,998,663	3,675,284	3,195,645	3,590,502	3,685,662
Indiana	5,467,061	8,584,225	7,533,290	8,255,622	8,843,452
Maryland	1,513,651	2,147,787	2,039,957	2,367,233	2,855,209
Massachusetts	1,130,620	1,056,701	891,400	855,217	1,108,826
Michigan	2,283,518	2,849,601	2,484,409	2,730,847	2,920,082
Minnesota	704,631	846,246	781,943	833,861	971,913
New Jersey	1,015,073	1,410,941	1,345,094	1,481,030	1,538,953
New York	4,946,964	5,687,225	5,164,790	5,412,318	5,610,975
Ohio	6,737,881	10,562,486	8,911,140	10,313,767	11,151,201
Pennsylvania	13,701,262	16,649,689	14,768,809	16,332,998	17,250,217
Tennessee	89,451	251,428	213,378	243,950	250,658
Texas	---------	644,225	497,019	686,407	755,418
Utah	149,659	1,058,501	901,829	1,140,737	1,226,536
Washington	14,656	---------	---------	---------	---------
West Virginia	1,817,993	3,298,090	3,182,857	3,388,626	3,829,879
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	1,892,949	2,273,215	2,073,456	2,106,592	2,133,363
Total	49,210,748	68,284,357	60,222,481	66,890,618	71,987,172
Beehive coke:					
Colorado	64,222	---------	---------	---------	716
Kentucky	---------	101,745	48,583	49,233	123,753
Pennsylvania	2,559,048	5,733,835	2,898,683	5,193,191	6,396,480
Tennessee	14,982	---------	---------	---------	1,638
Utah	6,657	188,586	132,762	84,808	101,672
Virginia	240,425	200,911	157,812	197,879	287,116
West Virginia	279,387	352,494	177,108	302,309	432,155
Total	3,164,721	6,577,571	3,414,948	5,827,420	7,343,530
Grand total	52,375,469	74,861,928	63,637,429	72,718,038	79,330,702

TABLE 5. - Number and production of oven-coke plants connected with iron furnaces and of other oven-coke plants in the United States, 1913, 1918, 1937, and 1949-51

Year	Number of active plants		Coke produced (net tons)		Percent of production	
	Furnace plants	Merchant plants	Furnace plants	Merchant plants	Furnace plants	Merchant plants
1913	20	16	9,277,832	3,436,868	73.0	27.0
1918	36	24	19,220,342	6,777,238	73.9	26.1
1937	43	42	36,134,209	13,076,539	73.4	26.6
1949	55	31	48,109,559	12,112,922	79.9	20.1
1950	55	30	54,543,796	12,346,822	81.5	18.5
1951	56	28	58,796,622	13,190,550	81.7	18.3

TABLE 6. - Potential maximum annual coke capacity of oven-coke plants in existence in the United States, 1937 and 1947-51

Year	Merchant plants				Furnace plants				Total			
	Plants	Ovens	Potential maximum annual coke capacity (net tons)	Percent of change from 1937	Plants	Ovens	Potential maximum annual coke capacity (net tons)	Percent of change from 1937	Plants	Ovens	Potential maximum annual coke capacity (net tons)	Percent of change from 1937
1937	42	3,419	15,731,900	-----	45	9,299	46,995,200	-----	87	12,718	62,727,100	-----
1947	32	3,047	14,599,200	-7.2	54	11,681	57,949,900	+23.3	86	14,728	72,549,100	+15.7
1948	31	2,983	14,199,900	-9.7	55	12,156	60,300,000	+28.3	86	15,139	74,499,900	+18.8
1949	30	3,057	14,209,200	-9.7	55	12,047	59,500,900	+26.6	85	15,104	73,710,100	+17.5
1950	29	3,036	13,959,300	-11.3	55	11,946	58,528,900	+24.5	84	14,982	72,488,200	+15.6
1951	27	2,958	13,535,500	-14.0	56	12,361	60,692,900	+29.1	83	15,319	74,228,400	+18.3

TABLE 7. - Relationship of production to potential maximum capacity 1/ at oven-coke plants in the United States, 1937 and 1948-51, by months, in percent

Month	1937	1948	1949	1950	1951	Month	1937	1948	1949	1950	1951
January	83.0	94.8	95.2	85.6	97.8	August	86.0	93.1	80.3	91.8	96.5
February	83.5	94.7	95.0	70.0	95.5	September	86.1	94.9	79.8	94.0	96.2
March	84.9	90.9	93.3	79.3	96.2	October	76.0	93.9	26.9	96.2	95.4
April	84.9	74.6	93.3	92.9	96.7	November	62.8	94.0	55.8	93.8	95.3
May	84.6	92.0	90.8	92.7	97.6	December	53.1	95.0	86.2	95.8	95.8
June	78.6	93.3	84.9	92.4	97.9	Year	78.8	92.0	79.7	90.0	96.5
July	83.2	92.2	77.0	93.7	97.3						

1/ Capacity of all ovens in existence, whether active or idle, based upon maximum daily capacity times days in month.

TABLE 8. - Coke breeze recovered at coke plants in the United States in 1951, by States

State	Yield per ton of coal 1/ (percent)	Produced		Used by producers - For steam raising	
		Net tons	Value	Net tons	Value
Oven coke:					
Alabama	4.08	357,615	$2,447,827	113,259	$661,809
California	6.71	62,026	(2)	---------	---------
Colorado	5.93	86,098	(2)	---------	---------
Illinois	5.50	286,578	1,018,253	109,149	338,401
Indiana	4.91	604,360	2,146,608	398,921	1,323,248
Maryland	5.57	220,285	(2)	222,636	(2)
Massachusetts	5.97	93,204	(2)	92,749	(2)
Michigan	5.13	205,360	900,334	138,436	543,476
Minnesota	4.89	65,512	254,542	28,172	90,457
New Jersey	5.14	109,127	(2)	110,925	(2)
New York	6.30	510,037	2,627,101	302,902	1,557,803
Ohio	5.33	844,496	2,905,816	418,142	1,464,486
Pennsylvania	4.45	1,118,711	3,147,923	1,016,454	2,795,425
Tennessee	0.99	3,175	(2)	4,326	(2)
Texas	4.04	42,131	(2)	---------	---------
Utah	8.96	173,344	(2)	16,358	(2)
West Virginia	3.82	205,015	479,496	132,439	307,994
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	4.83	138,760	526,456	123,311	430,600
Undistributed	---------	---------	3,377,959	---------	1,932,525
Total 1951	5.01	5,125,834	19,832,315	3,228,179	11,446,224
At merchant plants	5.10	933,836	4,559,886	679,807	3,023,376
At furnace plants	4.99	4,191,998	15,272,429	2,548,372	8,422,848
Total 1950	5.45	5,172,758	18,843,877	3,353,357	11,286,949
Beehive coke:					
Colorado	---------	---------	---------	---------	---------
Kentucky	---------	---------	---------	---------	---------
Pennsylvania	2.30	60,130	91,946	835	(2)
Utah	6.39	11,742	(2)	---------	---------
Virginia	1.23	4,336	(2)	---------	---------
West Virginia	2.87	11,445	15,464	2,618	(2)
Undistributed	---------	---------	105,546	---------	4,987
Total 1951	2.47	87,653	212,956	3,453	4,987

State	Used by producers - Ctd. For other purposes (including water gas)		Sold		Wasted (net tons)	On hand Dec. 31 (net tons)
	Net tons	Value	Net tons	Value		
Oven coke:						
Alabama	40,479	$250,951	216,795	$1,663,762	---------	27,987
California	44,314	(2)	27,504	(2)	---------	5,034
Colorado	44,890	(2)	40,824	(2)	---------	4,950
Illinois	31,662	126,229	145,656	550,877	---------	30,489
Indiana	139,483	424,453	110,257	538,007	---------	94,046
Maryland	29,893	(2)	10,480	(2)	---------	120,030
Massachusetts	---------	---------	877	(2)	---------	2,244
Michigan	47,609	188,627	25,324	164,058	---------	6,030
Minnesota	7,454	(2)	32,968	(2)	---------	18,178
New Jersey	---------	---------	7	(2)	---------	9,227
New York	146,166	758,418	35,294	183,378	---------	139,322
Ohio	196,814	617,657	237,861	849,578	3,253	81,269
Pennsylvania	120,856	335,626	149,492	437,185	---------	196,759
Tennessee	---------	---------	266	(2)	---------	1,085
Texas	16,095	(2)	34,627	(2)	---------	237
Utah	68,560	(2)	99,366	(2)	---------	1,807
West Virginia	39,954	89,698	48,797	116,248	---------	75,383
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	---------	---------	21,393	116,810	---------	6,815
Undistributed	---------	775,133	---------	1,180,297	---------	---------
Total 1951	974,229	3,566,792	1,237,788	5,800,200	3,253	820,892
At merchant plants	88,716	510,068	144,042	891,407	1,755	111,802
At furnace plants	885,513	3,056,724	1,093,746	4,908,793	1,498	709,090
Total 1950	910,593	3,198,864	1,407,041	5,514,409	1,900	1,114,662
Beehive coke:						
Colorado	---------	---------	---------	---------	---------	---------
Kentucky	---------	---------	---------	---------	---------	---------
Pennsylvania	---------	---------	40,066	60,680	19,049	5,413
Utah	---------	---------	26,739	(2)	---------	---------
Virginia	11	(3)	4,325	(2)	---------	---------
West Virginia	---------	---------	4,522	(2)	4,305	---------
Undistributed	---------	---------	---------	172,450	---------	---------
Total 1951	11	(3)	75,652	233,130	4/23,354	5,413

1/ Computed by dividing production of breeze by coal charged at plants actually recovering breeze. 2/ Included with "Undistributed" to avoid disclosure of individual operations. 3/ Included with value of breeze sold to avoid disclosure of individual operations. 4/ As reported; quantity produced but not used was undoubtedly greater. See Mineral Resources of the United States, 1922, pt. II, pp. 726-727.

TABLE 9. - Slot-type coke ovens completed and abandoned in the United States in 1951 and total number in existence at end of year, by States

State	Plants in existence Dec. 31	Ovens						
		In existence Dec. 31		New		Abandoned during year	Under construction Dec. 31	
		Number	Annual coke capacity (net tons)	Number	Annual coke capacity (net tons)		Number	Annual coke capacity (net tons)
Alabama	7	1,340	6,303,600	29	140,000	------	125	636,500
California	1	135	566,000	------	---------	------	------	---------
Colorado	1	266	1,000,000	------	---------	------	------	---------
Connecticut	1	70	(1)	------	---------	------	------	---------
Illinois	8	900	3,866,100	------	---------	------	42	233,300
Indiana	5	1,955	9,697,400	154	764,500	------	75	480,000
Kentucky	1	120	(1)	------	---------	------	76	515,000
Maryland	1	551	2,928,000	63	281,000	------	65	410,000
Massachusetts	1	204	1,260,000	------	---------	------	------	---------
Michigan	4	584	3,106,100	------	---------	------	107	675,700
Minnesota	3	240	985,900	------	---------	33	58	239,600
Missouri	1	56	(1)	------	---------	8	40	153,300
New Jersey	2	341	1,500,000	------	---------	------	------	---------
New York	7	1,115	5,867,400	36	178,000	57	76	463,000
Ohio	15	2,285	11,131,800	------	---------	25	259	1,455,500
Pennsylvania	13	3,710	17,824,000	310	1,982,600	236	460	2,467,600
Rhode Island	1	65	(1)	------	---------	------	------	---------
Tennessee	1	44	240,000	------	---------	------	------	---------
Texas	2	125	688,500	------	---------	------	------	---------
Utah	2	308	1,212,300	23	82,100	------	------	---------
West Virginia	5	705	3,851,000	61	390,000	------	63	405,000
Wisconsin	1	200	(1)	20	50,900	------	------	---------
Undistributed	------	------	2,200,300	------	---------	------	------	---------
Total 1951	83	15,319	74,228,400	696	3,869,100	359	1,446	8,134,500
At merchant plants	27	2,958	13,535,500	49	190,900	50	116	668,300
At furnace plants	56	12,361	60,692,900	647	3,678,200	309	1,330	7,466,200
Total 1950	84	14,982	72,488,200	574	3,086,300	696	706	3,992,600

1/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 10. - Beehive-coke ovens reconstructed and abandoned in the United States in 1951 and total number in existence at end of year, by States

State	Plants in existence Dec. 31	Ovens								
		Total available Dec. 31		In operating condition Dec. 31		Not in operating condition Dec. 31		Rebuilt or repaired	Abandoned or dismantled during year	In course of reconstruction Dec. 31
		Number	Annual coke capacity (net tons)	Number	Annual coke capacity (net tons)	Number	Annual coke capacity (net tons)			
Colorado	1	20	6,000	9	2,700	11	3,300	9	------	------
Kentucky	1	195	117,000	192	115,200	3	1,800	------	------	3
Pennsylvania	119	17,596	12,374,600	13,060	9,285,200	4,536	3,089,400	636	48	295
Tennessee	1	90	54,000	26	15,600	64	38,400	26	------	------
Utah	2	797	285,000	797	285,000	------	---------	------	------	------
Virginia	5	748	346,200	653	300,100	95	46,100	------	3	100
West Virginia	9	1,012	676,100	963	642,900	49	33,200	------	------	------
Total	138	20,458	13,858,900	15,700	10,646,700	4,758	3,212,200	671	51	398

TABLE 11. - Age of slot-type ovens in the United States on December 31, 1951 1/

Age	Merchant plants		Furnace plants		Total			
	Number	Annual coke capacity (net tons)	Number	Annual coke capacity (net tons)	Number	Percent of total	Annual coke capacity (net tons)	Percent of total
Under 5 years	178	864,700	2,093	11,501,200	2,271	14.8	12,365,900	16.7
From 5 to 10 years	198	879,600	2,201	11,554,300	2,399	15.7	12,433,900	16.7
From 10 to 15 years	322	1,684,700	1,316	7,510,800	1,638	10.7	9,195,500	12.4
From 15 to 20 years	145	542,500	890	4,633,400	1,035	6.8	5,175,900	7.0
From 20 to 25 years	574	3,192,300	547	3,056,400	1,121	7.3	6,248,700	8.4
25 years and over	1,541	6,371,700	5,314	22,436,800	6,855	44.7	28,808,500	38.8
Total	2,958	13,535,500	12,361	60,692,900	15,319	100.0	74,228,400	100.0

1/ Age dates from first entry into operation or from last date of rebuilding.

TABLE 12. - Oven coke produced and sold or used by producers in the United States in 1951, by States

State	Produced		Used by producers -				Sold 1/	
			In blast furnaces		For other purposes 2/		Blast furnace 3/	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
Alabama	6,291,280	$75,124,573	5,082,679	$53,719,336	24,238	$264,509	154,504	$2,491,214
California	568,216	(4)	583,537	(4)	491	(4)	----------	----------
Colorado	995,332	(4)	846,017	(4)	4,092	(4)	61,120	(4)
Illinois	3,685,662	62,052,609	1,888,408	28,973,788	26,159	406,132	1,400,503	$25,569,385
Indiana	8,843,452	156,205,401	6,451,645	109,904,769	60,616	937,678	1,563,787	29,509,566
Maryland	2,855,209	(4)	2,854,568	(4)	7,992	(4)	----------	----------
Massachusetts	1,108,826	(4)	165,160	(4)	126,209	(4)	93,728	(4)
Michigan	2,920,082	44,321,098	1,826,875	(4)	131,739	1,895,618	8,800	(4)
Minnesota	971,913	16,143,039	659,784	(4)	9,620	80,376	35,308	(4)
New Jersey	1,538,953	(4)	----------	----------	196,877	(4)	680,622	(4)
New York	5,610,975	80,327,062	1,984,006	(4)	638,525	8,515,381	2,322,098	31,999,289
Ohio	11,151,201	146,140,699	8,211,252	103,048,925	82,918	1,194,558	1,691,145	22,680,871
Pennsylvania	17,250,217	220,910,330	9,394,994	112,259,191	116,505	1,392,641	6,880,103	93,059,316
Tennessee	250,658	(4)	97,621	(4)	24,707	(4)	52,664	(4)
Texas	755,418	(4)	672,916	(4)	8,280	(4)	47,819	(4)
Utah	1,226,536	(4)	979,475	(4)	1,918	(4)	128,293	(4)
West Virginia	3,829,879	44,416,343	2,930,190	34,077,004	414,321	3,282,979	354,934	5,306,722
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	2,133,363	34,211,525	----------	----------	130,013	1,758,425	921,391	11,659,686
Undistributed	----------	137,212,872	----------	153,494,213	----------	4,929,499	----------	17,221,222
Total 1951	71,987,172	1,017,065,551	44,629,127	595,477,226	2,005,220	24,657,796	16,396,919	239,497,271
At merchant plants	13,190,550	218,174,099	366,394	4,509,999	1,743,717	21,252,857	3,973,340	61,775,402
At furnace plants	58,796,622	798,891,452	44,262,733	590,967,227	261,503	3,404,939	12,423,579	177,721,869
Total 1950	66,890,618	899,667,327	40,728,294	528,032,395	2,682,692	33,665,620	14,933,004	199,396,872

State	Sold 1/ - Continued							
	Foundry 5/		Other industrial (including water gas 6/)		Domestic 7/		Total	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
Alabama	650,716	$13,063,953	241,881	$3,879,285	76,320	$856,725	1,123,521	$20,291,177
California	----------	----------	----------	----------	----------	----------	----------	----------
Colorado	25,238	(4)	30,525	(4)	502	(4)	117,385	(4)
Illinois	241,745	5,340,039	66,311	884,366	62,805	881,068	1,771,364	32,674,858
Indiana	514,617	(4)	128,323	(4)	96,337	1,202,079	2,303,064	44,754,503
Maryland	----------	----------	----------	----------	----------	----------	----------	----------
Massachusetts	133,580	(4)	214,587	(4)	330,312	(4)	772,207	(4)
Michigan	420,613	(4)	306,542	4,395,856	182,809	2,258,861	918,764	16,724,027
Minnesota	148,998	(4)	42,804	(4)	64,872	(4)	291,982	(4)
New Jersey	117,320	(4)	165,597	(4)	346,318	(4)	1,309,857	(4)
New York	----------	----------	335,636	4,966,547	304,788	4,390,067	2,962,522	41,355,903
Ohio	293,422	6,765,312	753,538	10,802,744	131,503	1,654,096	2,859,608	41,903,023
Pennsylvania	342,714	7,671,529	232,434	3,031,727	165,910	2,205,125	7,621,161	105,967,697
Tennessee	37,579	(4)	23,836	(4)	32	(4)	114,111	(4)
Texas	841	(4)	28,807	(4)	----------	----------	77,467	(4)
Utah	----------	----------	109,727	(4)	3,870	(4)	241,890	(4)
West Virginia	60,898	(4)	45,487	(4)	38,061	268,323	499,380	7,182,820
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	529,912	12,031,278	260,172	3,977,861	266,258	4,352,411	1,977,733	32,021,236
Undistributed	----------	33,000,478	----------	12,227,543	----------	11,702,199	----------	48,431,499
Total 1951	3,518,193	77,872,589	2,986,207	44,165,929	2,060,697	29,770,954	24,962,016	391,306,743
At merchant plants	3,048,849	67,766,217	2,236,108	34,726,313	1,665,117	25,478,287	10,923,414	189,746,219
At furnace plants	469,344	10,106,372	750,099	9,439,616	395,580	4,292,667	14,038,602	201,560,524
Total 1950	3,236,218	64,977,233	3,385,133	48,154,933	2,546,164	34,633,619	24,100,519	347,162,657

1/ Includes intra-company transfers. 2/ Comprises 59,397 tons valued at $967,508 used in foundries; 578,284 tons, $7,457,643 to make producer gas; 1,028,521 tons, $11,849,194 to make water gas; and 339,018 tons, $4,383,451 for other purposes. 3/ Includes 11,256,984 tons valued at $159,093,772 sold to financially affiliated companies. 4/ Included with "Undistributed" to avoid disclosure of individual operations. 5/ Includes 57,665 tons valued at $1,093,956 sold to financially affiliated companies. 6/ Includes 663,144 tons valued at $10,056,072 for manufacture of water gas and 301,363 tons, $4,907,142 for other industrial use sold to financially affiliated companies; and 516,005 tons, $8,162,062 for manufacture of water gas sold to other consumers. 7/ Household and commercial.

TABLE 13. - Beehive coke produced and sold or used by producers in the United States in 1951, by States

State	Produced		Used by producers -				Sold 1/	
			In blast furnaces		For other purposes		Blast furnace 2/	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
Colorado	716	(3)	-------	-------	-------	-------	65	(3)
Kentucky	123,753	(3)	-------	-------	-------	-------	103,082	(3)
Pennsylvania	6,396,480	$87,877,904	348,104	(3)	1,571	(3)	5,588,993	$76,330,256
Tennessee	1,638	(3)	-------	-------	-------	-------	1,638	(3)
Utah	101,672	(3)	22,628	(3)	-------	-------	-------	-------
Virginia	287,116	4,453,445	-------	-------	-------	-------	110,071	1,699,180
West Virginia	432,155	6,407,259	-------	-------	8	(3)	240,360	3,394,039
Undistributed	-------	3,669,527	-------	$5,675,482	-------	$22,632	-------	1,469,557
Total: 1951	7,343,530	102,408,135	370,732	5,675,482	1,579	22,632	6,044,209	82,893,032
1950	5,827,420	77,235,875	67,434	795,163	2,732	38,011	5,189,817	68,449,049

State	Sold 1/ - Continued							
	Foundry		Other industrial 4/ (including water gas)		Domestic 5/		Total	
	Net tons	Value	Net tons	Value	Net tons	Value	Net tons	Value
Colorado	21	(3)	630	(3)	-------	-------	716	(3)
Kentucky	20,671	(3)	-------	-------	-------	-------	123,753	(3)
Pennsylvania	142,607	$2,199,782	286,716	$3,823,998	26,314	$340,587	6,044,630	$82,694,623
Tennessee	-------	-------	-------	-------	-------	-------	1,638	(3)
Utah	-------	-------	77,393	(3)	-------	-------	77,393	(3)
Virginia	23,558	(3)	152,727	2,361,955	896	(3)	287,252	4,455,528
West Virginia	41,239	(3)	152,187	(3)	27	(3)	433,813	6,427,852
Undistributed	-------	1,467,441	-------	3,569,203	-------	14,114	-------	3,092,109
Total: 1951	228,096	3,667,223	669,653	9,755,156	27,237	354,701	6,969,195	96,670,112
1950	184,178	2,764,756	398,940	5,445,471	19,012	225,054	5,791,947	76,884,330

1/ Includes intra-company transfers. 2/ Includes 1,771,379 tons valued at $22,203,458 sold to financially affiliated companies. 3/ Included with "Undistributed" to avoid disclosure of individual operations. 4/ Includes 5 tons valued at $77 sold to financially affiliated companies for other industrial use and 114,473 tons, $1,756,735 sold to other consumers for the manufacture of water gas. 5/ Household and commercial.

TABLE 14. - Coke consumed in manufacture of pig iron and for other purposes in the United States, 1913, 1918, 1937, and 1949-51, in net tons

Year	Total production	Imports	Exports	Net change in stocks	Apparent United States consumption 1/	Consumed by iron furnaces 2/		Remainder consumed in other ways	
						Quantity	Percent	Quantity	Percent
1913	46,299,530	101,212	987,395	(3)	45,413,347	37,192,287	81.9	8,221,060	18.1
1918	56,478,372	30,168	1,687,824	(3)	54,820,716	45,703,594	83.4	9,117,122	16.6
1937	52,375,469	286,364	526,683	+863,221	51,271,929	37,599,911	73.3	13,672,018	26.7
1949	63,637,429	277,507	548,256	+176,015	63,190,665	51,356,617	81.3	11,834,048	18.7
1950	72,718,038	437,585	397,846	-658,742	73,416,519	61,039,227	83.1	12,377,292	16.9
1951	79,330,702	161,639	1,026,730	+372,258	78,093,353	66,623,205	85.3	11,470,148	14.7

1/ Production plus imports minus exports, plus or minus net changes in stocks. 2/ American Iron and Steel Institute; figures include coke consumed in manufacture of ferro-alloys. 3/ Data not available.

TABLE 15. - Coke and coking coal consumed per net ton of pig iron made in the United States, 1913, 1918, 1937, and 1949-51

Year	Coke per net ton of pig iron and ferro-alloys 1/ (pounds)	Yield of coke from coal (percent)	Coking coal per net ton of pig iron and ferro-alloys (pounds calculated)	Year	Coke per net ton of pig iron and ferro-alloys 1/ (pounds)	Yield of coke from coal (percent)	Coking coal per net ton of pig iron and ferro-alloys (pounds calculated)
1913	2,172.6	66.9	3,247.5	1949	1,895.8	69.6	2,723.9
1918	2,120.7	66.4	3,193.8	1950	1,865.5	69.9	2,668.8
1937	1,830.6	70.3	2,604.0	1951	1,870.7	69.8	2,680.1

1/ American Iron and Steel Institute; consumption per ton of pig iron only, excluding furnaces making ferro-alloys, was 2,172.6 pounds in 1913, 2,120.7 in 1918, 1,806.7 in 1937, 1,870.4 in 1949, 1,843.1 in 1950, and 1,848.7 in 1951.

TABLE 16. - Oven and beehive coke and breeze distributed to each State in 1951, in net tons
(Based upon reports from all United States producers showing destination of coke used by producers or sold in 1951. Does not include imported coke which totaled 161,639 tons in 1951)

Consuming State	Coke							Coke breeze
	Blast-furnace use	Foundry use	Making producer gas	Making water gas	Other industrial use	Domestic use	Total	
Alabama	5,162,439	245,332	-------	---------	98,878	31,684	5,538,333	229,853
Arizona	----------	5,366	-------	---------	991	---------	6,357	97
Arkansas	----------	840	-------	---------	4,421	---------	5,261	4,663
California	628,028	78,226	-------	38	82,703	---------	788,995	56,091
Colorado	846,017	15,641	-------	---------	42,094	424	904,176	46,834
Connecticut	----------	68,529	87,843	143,801	6,846	100,652	407,671	47,446
Delaware	----------	5,028	-------	254	788	448	6,518	8,245
District of Columbia	----------	----------	-------	---------	178	---------	178	---------
Florida	----------	2,310	-------	36,304	769	1,661	41,044	31,300
Georgia	----------	17,496	-------	5,126	5,592	17,017	45,231	---------
Idaho	----------	713	-------	---------	4,197	200	5,110	70,498
Illinois	5,767,784	344,307	-------	22,209	88,220	94,085	6,316,605	378,789
Indiana	6,929,415	229,853	2,839	19,786	179,578	87,767	7,449,238	572,604
Iowa	----------	93,876	-------	---------	24,397	2,523	120,796	3,402
Kansas	----------	16,301	-------	---------	1,564	20	17,885	2,850
Kentucky	677,848	46,865	-------	---------	52,766	42,490	819,969	49,660
Louisiana	----------	7,410	-------	---------	58,095	798	66,303	168
Maine	----------	6,554	-------	12,476	390	15,000	34,420	---------
Maryland	3,193,457	28,435	-------	538	22,738	530	3,245,698	258,383
Massachusetts	165,160	70,095	122,285	200,435	15,488	353,006	926,469	94,046
Michigan	1,859,065	634,729	-------	---------	237,346	42,729	2,773,869	233,546
Minnesota	659,784	38,715	4,541	167	26,626	49,461	779,294	91,892
Mississippi	----------	1,072	-------	---------	100	105	1,277	24,309
Missouri	----------	91,546	-------	91	23,602	754	115,993	6,924
Montana	----------	1,727	-------	---------	23,823	---------	25,550	30,909
Nebraska	----------	4,510	-------	---------	3,487	49	8,046	106
Nevada	----------	----------	-------	---------	7,781	---------	7,781	---------
New Hampshire	----------	4,230	-------	10,364	339	16,779	31,712	---------
New Jersey	----------	117,195	67,243	185,077	71,365	321,489	762,369	121,384
New Mexico	----------	212	-------	---------	2,649	---------	2,861	634
New York	4,092,617	166,455	199,005	474,718	296,255	342,805	5,571,945	502,792
North Carolina	----------	16,258	-------	1,510	10,232	2,630	30,630	1,420
North Dakota	----------	730	-------	---------	211	276	1,217	---------
Ohio	13,023,209	403,442	-------	293,004	366,171	208,284	14,294,110	758,146
Oklahoma	----------	6,176	-------	---------	247	---------	6,423	16,631
Oregon	----------	6,734	-------	---------	12,055	---------	18,789	1,754
Pennsylvania	20,754,028	356,763	67,513	54,196	264,157	168,407	21,665,064	1,293,640
Rhode Island	----------	19,747	22,788	43,916	15,190	50,974	152,615	19,068
South Carolina	----------	6,549	-------	2,461	20,396	2,750	32,156	4,329
South Dakota	----------	420	-------	---------	250	222	892	---------
Tennessee	99,259	108,349	-------	---------	70,447	5,451	283,506	102,945
Texas	676,889	55,426	-------	35	55,681	58	788,089	88,354
Utah	1,147,090	18,766	-------	---------	44,568	3,740	1,214,164	103,758
Vermont	----------	6,871	-------	---------	689	5,174	12,734	---------
Virginia	105,936	62,154	-------	363,675	64,724	257	596,746	4,369
Washington	----------	10,159	-------	---------	13,357	---------	23,516	14,057
West Virginia	1,391,369	17,050	-------	447,018	90,943	199	1,946,579	185,307
Wisconsin	----------	204,436	4,227	---------	15,618	70,051	294,332	42,488
Wyoming	----------	----------	-------	---------	2,000	---------	2,000	---------
Total	67,179,394	3,643,598	578,284	2,317,199	2,431,002	2,041,039	78,190,516	5,503,691
Exported	261,593	162,088	-------	4,944	271,833	46,895	747,353	15,621
Grand total	67,440,987	3,805,686	578,284	2,322,143	2,702,835	2,087,934	78,937,869	5,519,312

TABLE17. - Coke and breeze sold and loaded at plants in the United States for shipment in 1951, in net tons

State	Coke				Breeze			
	In railroad cars	In boats	In trucks	Total	In railroad cars	In boats	In trucks	Total
Oven coke:								
Alabama	1,118,440	------	5,081	1,123,521	216,795	------	------	216,795
California	------	------	------	------	27,504	------	------	27,504
Colorado	116,741	------	644	117,385	40,758	------	66	40,824
Illinois	1,754,647	------	16,717	1,771,364	124,579	------	21,077	145,656
Indiana	2,273,144	------	29,920	2,303,064	48,350	------	61,907	110,257
Maryland	------	------	------	------	10,480	------	------	10,480
Massachusetts	557,781	2,463	211,963	772,207	------	------	877	877
Michigan	845,334	19,649	53,781	918,764	25,087	------	237	25,324
Minnesota	283,732	------	8,250	291,982	32,968	------	------	32,968
New Jersey	991,934	93,302	224,621	1,309,857	------	------	7	7
New York	2,491,321	196,544	274,657	2,962,522	30,797	3,856	641	35,294
Ohio	2,773,555	39,835	46,218	2,859,608	191,512	7,708	38,641	237,861
Pennsylvania	7,153,258	300,607	167,296	7,621,161	139,841	8,912	739	149,492
Tennessee	114,111	------	------	114,111	266	------	------	266
Texas	77,467	------	------	77,467	34,627	------	------	34,627
Utah	233,442	------	8,448	241,890	99,361	------	5	99,366
West Virginia	1,518,574	------	417	1,518,991	48,689	------	108	48,797
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	1,646,941	58,919	271,873	1,977,733	8,161	2,984	10,248	21,393
Total	23,950,422	711,319	1,319,886	25,981,627	1,079,775	23,460	134,553	1,237,788
At merchant plants	9,344,118	393,017	1,186,279	10,923,414	111,602	19,025	13,415	144,042
At furnace plants	14,606,304	318,302	133,607	15,058,213	968,173	4,435	121,138	1,093,746
Beehive coke:								
Colorado	716	------	------	716	------	------	------	------
Kentucky	123,753	------	------	123,753	------	------	------	------
Pennsylvania	6,355,657	21,547	4,579	6,381,783	37,652	2,414	------	40,066
Tennessee	1,638	------	------	1,638	------	------	------	------
Utah	77,345	------	48	77,393	24,906	------	1,833	26,739
Virginia	286,976	------	276	287,252	4,325	------	------	4,325
West Virginia	433,790	------	23	433,813	1,711	------	2,811	4,522
Total	7,279,875	21,547	4,926	7,306,348	68,594	2,414	4,644	75,652

TABLE 18. - Beehive coke loaded for shipment on originating railroads, waterways, and trucks in the United States in 1951, by routes, as reported by producers

Route	Producing State	Net tons		Percent of total
		By States	Total	
Railroads:				
Baltimore & Ohio	(Pennsylvania	1,255,557	1,508,667	20.7
	(West Virginia	253,110		
Chesapeake & Ohio	(Kentucky	123,753	158,219	2.2
	(West Virginia	34,466		
Denver & Rio Grande Western	(Colorado	716	78,061	1.1
	(Utah	77,345		
Huntingdon & Broad Top Mountain	Pennsylvania	8,166	8,166	0.1
Interstate	Virginia	254,276	254,276	3.5
Ligonier Valley	Pennsylvania	9,863	9,863	0.1
Monongahela	do	1,836,226	1,836,226	25.1
Nashville, Chattanooga, & St. Louis	Tennessee	1,638	1,638	(1)
New York Central	West Virginia	142,422	142,422	1.9
Norfolk & Western	Virginia	32,700	32,700	0.4
Pennsylvania	Pennsylvania	3,140,572	3,140,572	43.0
Pittsburgh & Lake Erie	do	105,273	105,273	1.4
Western Maryland	West Virginia	3,792	3,792	0.1
Total railroad shipments	------	7,279,875	7,279,875	99.6
Waterways: Monongahela and Ohio Rivers	Pennsylvania	21,547	21,547	0.3
Trucks	(2)	4,926	4,926	0.1
Grand total	------	7,306,348	7,306,348	100.0

1/ Less than 0.05 percent. 2/ Pennsylvania, Utah, Virginia, and West Virginia.

TABLE 19. - Producers' stocks of coke and breeze in the United States on January 1, 1952, by States, in net tons

State	Coke				Breeze
	Blast furnace	Foundry	Domestic and other	Total	
Oven coke:					
Alabama	144,207	8,447	9,602	162,256	27,987
California	20,032	------	------	20,032	5,034
Colorado	32,327	------	------	32,327	4,950
Illinois	35,487	533	2,119	38,139	30,489
Indiana	38,863	1,711	39,331	79,905	94,046
Maryland	64,885	------	------	64,885	120,030
Massachusetts	143	245	75,382	75,770	2,244
Michigan	51,078	280	12,081	63,439	6,030
Minnesota	16,897	------	3,308	20,205	18,178
New Jersey	13,822	236	58,735	72,793	9,227
New York	31,820	------	106,905	138,725	139,322
Ohio	148,396	1,382	8,640	158,418	81,269
Pennsylvania	319,165	178	34,751	354,094	196,759
Tennessee	16,337	------	------	16,337	1,085
Texas	3,658	32	227	3,917	237
Utah	48,574	------	330	48,904	1,807
West Virginia	24,490	------	15,335	39,825	75,383
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	1,808	3,096	72,524	77,428	6,815
Total	1,011,989	16,140	439,270	1,467,399	820,892
At merchant plants	19,254	15,620	406,506	441,380	111,802
At furnace plants	992,735	520	32,764	1,026,019	709,090
Beehive coke:					
Colorado	------	------	------	------	------
Kentucky	------	------	------	------	------
Pennsylvania	11,935	455	------	12,390	5,413
Tennessee	------	------	------	------	------
Utah	1,314	------	------	1,314	------
Virginia	675	------	100	775	------
West Virginia	205	889	------	1,094	------
Total	14,129	1,344	100	15,573	5,413

TABLE 20. - Summary of total stocks of coke on hand at all coke plants in the United States on January 1, 1937 and 1948-52, in net tons

	1937	1948	1949	1950	1951	1952
Oven-coke plants:						
Blast furnace	282,144	376,097	940,727	838,718	756,199	1,011,989
Foundry	8,981	12,362	7,003	13,120	8,466	16,140
Domestic and other	1,408,350	631,397	612,851	864,720	327,997	439,270
Total	1,699,475	1,019,856	1,560,581	1,716,558	1,092,662	1,467,399
Beehive-coke plants:						
Blast furnace	5,622	10,181	30,629	51,580	17,068	14,129
Foundry	8,508	50	964	1,118	884	1,344
Domestic and other	18,461	2,150	1,267	200	100	100
Total	32,591	12,381	32,860	52,898	18,052	15,573
Total:						
Blast furnace	287,766	386,278	971,356	890,298	773,267	1,026,118
Foundry	17,489	12,412	7,967	14,238	9,350	17,484
Domestic and other	1,426,811	633,547	614,118	864,920	328,097	439,370
Grand total	1,732,066	1,032,237	1,593,441	1,769,456	1,110,714	1,482,972

TABLE 21. - Stocks of bituminous coal at oven-coke plants in the United States at end of each month, 1937 and 1949-51, in net tons

Month	1937	1949	1950	1951
January	8,030,871	12,480,691	7,087,355	16,960,185
February	8,687,389	13,758,864	3,448,610	16,366,139
March	9,638,317	11,451,673	4,847,923	16,751,447
April	8,543,774	12,913,613	7,490,871	16,464,045
May	8,187,883	15,870,342	9,572,167	16,179,877
June	7,770,256	15,746,565	11,279,551	16,254,127
July	7,432,741	13,895,773	10,385,780	14,034,705
August	7,455,932	13,610,849	12,339,744	14,448,916
September	7,760,533	11,774,213	13,964,334	14,426,401
October	8,066,938	9,946,089	15,665,689	14,953,056
November	8,114,094	10,059,834	16,329,150	15,123,117
December	7,273,403	9,892,891	16,776,070	15,257,762

TABLE 22. - Average receipts per net ton of coke sold (merchant sales) in the United States in 1951, by States

State	Oven coke				Beehive coke			
	Blast furnace	Foundry	Other industrial including water gas	Domestic 1/	Blast furnace	Foundry	Other industrial including water gas	Domestic 1/
Alabama	$17.57	$20.08	$16.04	$11.23	------	------	------	------
California, Colorado, Texas, and Utah	17.05	22.40	13.54	8.97	(2)	(2)	(2)	------
Connecticut, Massachusetts, and Rhode Island	15.08	21.94	16.18	16.05	------	------	------	------
Illinois	17.08	22.94	13.39	14.03	------	------	------	------
Indiana	20.00	(2)	(2)	12.48	------	------	------	------
Kentucky, Missouri, and Tennessee	11.73	22.21	14.53	14.81	(2)	(2)	------	------
Michigan, Minnesota, and Wisconsin	17.67	23.27	14.43	13.80	------	------	------	------
New Jersey and New York	16.18	(2)	14.49	15.06	------	------	------	------
Ohio	16.54	23.07	11.54	13.61	------	------	------	------
Pennsylvania	15.04	22.42	13.03	13.29	$14.18	$15.43	$13.34	$12.94
Virginia	------	------	------	------	15.44	(2)	15.47	(2)
West Virginia	14.95	(2)	(2)	7.05	14.12	(2)	(2)	(2)
Undistributed	------	22.28	14.32	------	14.02	17.17	15.50	15.29
United States average 1951	15.64	22.19	14.44	14.45	14.20	16.08	14.57	13.02
At merchant plants	15.55	22.28	15.66	15.30	------	------	------	------
At furnace plants	15.97	21.57	12.03	10.85	------	------	------	------
United States average 1950	14.31	20.05	14.10	13.60	13.56	15.01	13.65	11.84

1/ Household and commercial. 2/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 23. - Average value per net ton of coke produced and average receipts per net ton from coke sold (merchant sales) in the United States, 1937 and 1947-51

Year	Value per ton produced			Receipts per ton sold		
	Oven coke	Beehive coke	Total	Oven coke	Beehive coke	Total
1937	$5.03	$4.31	$4.98	$6.45	$4.25	$6.10
1947	10.65	9.77	10.57	11.98	10.31	11.54
1948	12.43	12.10	12.40	14.74	12.80	14.22
1949	13.26	12.87	13.24	15.12	13.52	14.85
1950	13.45	13.25	13.43	15.66	13.63	15.15
1951	14.13	13.95	14.11	17.04	14.33	16.25

TABLE 24. - Quantity and value at ovens of coal used in manufacturing coke in the United States in 1951, by States

State	Coal used (net tons)	Cost of coal		Coal per ton of coke	
		Total	Per ton	Net tons	Cost
Oven coke:					
Alabama	8,756,422	$64,721,797	$7.39	1.39	$10.29
California	924,537	(1)	(1)	1.63	(1)
Colorado	1,452,062	(1)	(1)	1.46	(1)
Illinois	5,214,085	53,453,852	10.25	1.41	14.50
Indiana	12,320,739	124,787,818	10.13	1.39	14.11
Maryland	3,955,067	(1)	(1)	1.39	(1)
Massachusetts	1,561,541	(1)	(1)	1.41	(1)
Michigan	4,001,353	36,718,819	9.18	1.37	12.57
Minnesota	1,338,937	13,974,534	10.44	1.38	14.38
New Jersey	2,124,486	(1)	(1)	1.38	(1)
New York	8,095,523	82,166,053	10.15	1.44	14.64
Ohio	15,858,101	138,035,734	8.70	1.42	12.38
Pennsylvania	25,127,515	201,625,769	8.02	1.46	11.69
Tennessee	322,037	(1)	(1)	1.28	(1)
Texas	1,041,766	(1)	(1)	1.38	(1)
Utah	1,934,422	(1)	(1)	1.58	(1)
West Virginia	5,366,963	35,107,340	6.54	1.40	9.17
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	2,871,861	27,858,734	9.70	1.35	13.06
Undistributed	----------	135,692,202	10.19	1.43	14.59
Total	102,267,417	914,142,702	8.94	1.42	12.70
At merchant plants	18,322,799	174,070,715	9.50	1.39	13.20
At furnace plants	83,944,618	740,071,987	8.82	1.43	12.59
Beehive coke:					
Colorado	1,300	(1)	(1)	1.82	(1)
Kentucky	179,189	(1)	(1)	1.45	(1)
Pennsylvania	9,872,414	61,787,832	6.26	1.54	9.66
Tennessee	3,440	(1)	(1)	2.10	(1)
Utah	183,830	(1)	(1)	1.81	(1)
Virginia	492,062	2,826,791	5.74	1.71	9.85
West Virginia	686,230	3,659,248	5.33	1.59	8.47
Undistributed	----------	1,938,246	5.27	1.61	8.51
Total	11,418,465	70,212,117	6.15	1.55	9.56

1/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 25. - Coal consumed in coke ovens in the United States, 1937 and 1950-51, by months, in net tons

Month	1937			1950			1951		
	Coke oven	Beehive	Total	Coke oven 1/	Beehive	Total	Coke oven 2/	Beehive	Total
January	6,198,700	426,600	6,625,300	7,710,300	204,200	7,914,500	8,640,500	1,131,600	9,772,100
February	5,679,900	458,500	6,138,400	5,714,500	67,800	5,782,300	7,670,400	941,300	8,611,700
March	6,387,000	556,800	6,943,800	7,165,000	486,300	7,651,300	8,596,500	983,800	9,580,300
April	6,183,800	480,800	6,664,600	8,115,400	783,400	8,898,800	8,429,500	872,800	9,302,300
May	6,368,500	509,700	6,878,200	8,396,800	839,200	9,236,000	8,726,800	948,400	9,675,200
June	5,729,200	430,500	6,159,700	8,093,400	911,600	9,005,000	8,479,200	969,600	9,448,800
July	6,217,200	441,700	6,658,900	8,386,500	795,500	9,182,000	8,720,100	826,900	9,547,000
August	6,425,800	401,100	6,826,900	8,227,500	1,018,500	9,246,000	8,754,700	963,800	9,718,500
September	6,220,700	392,800	6,613,500	8,084,500	961,100	9,045,600	8,468,700	862,300	9,331,000
October	5,664,800	351,600	6,016,400	8,506,600	1,055,400	9,562,000	8,709,600	985,000	9,694,600
November	4,527,000	264,000	4,791,000	8,028,600	936,900	8,965,500	8,384,400	965,300	9,349,700
December	3,972,800	212,700	4,185,500	8,497,200	1,028,500	9,525,700	8,687,000	967,700	9,654,700
Total	69,575,400	4,926,800	74,502,200	94,926,300	9,088,400	104,014,700	102,267,400	11,418,500	113,685,900

1/ Includes 169,300 tons of anthracite fines. 2/ Includes 237,100 tons of anthracite fines.

TABLE 26. - Average cost per net ton of coal carbonized at oven-coke plants in the United States, 1937 and 1947-51, by States

State	1937	1947	1948	1949	1950	1951
Alabama	$2.33	$5.57	$6.48	$6.81	$6.96	$7.39
Illinois	4.62	8.00	9.38	9.75	9.98	10.25
Indiana	4.71	8.01	9.35	9.71	9.87	10.13
Michigan	4.16	6.79	8.26	8.99	9.01	9.18
Minnesota	5.24	8.33	9.90	10.10	10.21	10.44
New York	4.55	7.76	9.48	9.83	9.85	10.15
Ohio	3.76	6.76	8.11	8.42	8.51	8.70
Pennsylvania	2.98	5.87	7.22	7.64	7.82	8.02
West Virginia	2.54	4.72	6.14	6.37	6.72	6.54
Other States 1/	4.53	7.46	8.88	9.42	9.57	10.10
United States average	3.74	6.78	8.13	8.52	8.67	8.94
Cost of coal per ton of coke	5.27	9.60	11.58	12.18	12.30	12.70

1/ California, Colorado, Connecticut, Kentucky, Maryland, Massachusetts, Missouri, New Jersey, Rhode Island, Tennessee, Texas, Utah, and Wisconsin.

TABLE 27. - Cost of coal and value of products per net ton of coke produced in the United States, 1918, 1929, 1937, and 1948-51

Year	Oven coke				Beehive coke	
	Cost of coal per ton of coke	Value per ton of coke produced			Cost of coal per ton of coke	Value per ton
		Coke	Coal-chemical materials 1/	Total		
1918	$6.00	$7.42	$3.08	$10.50	$3.65	$6.21
1929	5.04	4.80	3.56	8.36	2.85	3.49
1937	5.27	5.03	2.97	8.00	3.14	4.31
1948	11.58	12.43	4.42	16.85	8.02	12.10
1949	12.18	13.26	4.45	17.71	8.50	12.87
1950	12.30	13.45	4.51	17.96	8.88	13.25
1951	12.70	14.13	4.93	19.06	9.56	13.95

1/ Includes value of breeze produced.

TABLE 28. - Washed and unwashed coal used in manufacturing coke in the United States in 1951, by States in which used, in net tons

State	Slot-type ovens				Beehive ovens		
	Bituminous		Anthracite	Total	Bituminous		
	Washed	Unwashed			Washed	Unwashed	Total
Alabama	8,301,639	415,751	39,032	8,756,422	--------	--------	--------
California	818,712	105,825	--------	924,537	--------	--------	--------
Colorado	1,452,062	--------	--------	1,452,062	--------	1,300	1,300
Illinois	2,172,062	3,022,601	19,422	5,214,085	--------	--------	--------
Indiana	8,145,854	4,174,885	--------	12,320,739	--------	--------	--------
Maryland	--------	3,955,067	--------	3,955,067	--------	--------	--------
Massachusetts	--------	1,539,313	22,228	1,561,541	--------	--------	--------
Michigan	749,483	3,251,870	--------	4,001,353	--------	--------	--------
Minnesota	404,980	915,100	18,857	1,338,937	--------	--------	--------
New Jersey	686,352	1,430,691	7,443	2,124,486	--------	--------	--------
New York	2,589,234	5,504,174	2,115	8,095,523	--------	--------	--------
Ohio	8,153,948	7,704,153	--------	15,858,101	--------	--------	--------
Pennsylvania	13,832,221	11,214,590	80,704	25,127,515	1,806,311	8,066,103	9,872,414
Tennessee	--------	322,037	--------	322,037	--------	3,440	3,440
Texas	791,441	250,325	--------	1,041,766	--------	--------	--------
Utah	--------	1,934,422	--------	1,934,422	183,830	--------	183,830
Virginia	--------	--------	--------	--------	--------	492,062	492,062
West Virginia	2,074,097	3,280,328	12,538	5,366,963	--------	686,230	686,230
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	881,657	1,955,407	34,797	2,871,861	--------	179,189	179,189
Total	51,053,742	50,976,539	237,136	102,267,417	1,990,141	9,428,324	11,418,465
At merchant plants	3,755,910	14,388,383	178,506	18,322,799	--------	--------	--------
At furnace plants	47,297,832	36,588,156	58,630	83,944,618	--------	--------	--------

TABLE 29. - Coal received for manufacturing oven coke in the United States in 1951, by fields of origin and volatile content, in net tons

State and field 1/ where coal was produced	Volatile content 2/			Total coal received
	High	Medium	Low	
Alabama	124,727	8,816,933	--------	8,941,660
Arkansas	--------	--------	292,166	292,166
Colorado	1,007,119	--------	--------	1,007,119
Georgia	--------	--------	2,069	2,069
Illinois	450,641	--------	--------	450,641
Indiana	19,015	--------	--------	19,015
Kentucky:				
Elkhorn	5,470,687	--------	--------	5,470,687
Harlan	7,106,992	--------	--------	7,106,992
Hazard	49,016	--------	--------	49,016
Kenova-Thacker	1,025,768	--------	--------	1,025,768
New Mexico	500,420	--------	--------	500,420
Oklahoma	447,228	281,497	390,857	1,119,582
Pennsylvania:				
Anthracite	--------	--------	185,951	185,951
Bituminous:				
Central Pennsylvania	1,000,976	972,090	5,695,390	7,668,456
Connellsville	12,207,037	25,492	--------	12,232,529
Freeport	3,026,416	--------	--------	3,026,416
Pittsburgh	10,849,332	--------	--------	10,849,332
Somerset	--------	--------	519,153	519,153
Westmoreland	352,433	--------	--------	352,433
Tennessee	114,402	243,436	--------	357,838
Texas	60	--------	--------	60
Utah	2,459,415	--------	--------	2,459,415
Virginia:				
Clinch Valley	717,760	401,504	--------	1,119,264
Pocahontas	--------	--------	1,035,186	1,035,186
Southwestern	910,335	10,469	--------	920,804
West Virginia:				
Coal River	114,533	--------	--------	114,533
Fairmont	4,938,166	116,110	--------	5,054,276
Kanawha	7,003,178	398,594	--------	7,401,772
Kenova-Thacker	58,607	13,231	--------	71,838
Logan	3,039,384	--------	--------	3,039,384
New River	296,038	122,577	495,177	913,792
Panhandle	88,389	--------	--------	88,389
Pocahontas	--------	--------	12,862,231	12,862,231
Preston-Taylor	--------	16,209	--------	16,209
Randolph-Barbour	516,707	396,511	--------	913,218
Tug River	--------	--------	493,609	493,609
Webster-Gauley	385,629	817,434	--------	1,203,063
Winding Gulf	--------	721,131	2,974,638	3,695,769
Total	64,280,410	13,353,218	24,946,427	102,580,055

1/ As defined by the U. S. Coal Commission of 1922. 2/ High-volatile - dry volatile matter more than 31 percent; medium-volatile - dry volatile matter 31 percent or less and more than 22 percent; low-volatile - dry volatile matter 22 percent or less and more than 14 percent.

TABLE 30. - Coal received for manufacturing oven coke in the United States in 1951, by States where consumed and by volatile content 1/

State where coal was consumed	High-volatile		Medium-volatile		Low-volatile		Total coal received (net tons)
	Net tons	Percent of total	Net tons	Percent of total	Net tons	Percent of total	
Alabama:							
Merchant plants	24,073	2.0	939,899	76.6	263,518	21.4	1,227,490
Furnace plants	48,895	0.6	7,753,926	99.3	8,135	0.1	7,810,956
Total Alabama	72,968	0.8	8,693,825	96.2	271,653	3.0	9,038,446
California:							
Furnace plant	848,881	88.7	----------	-----	108,464	11.3	957,345
Colorado:							
Furnace plant	1,507,539	88.2	----------	-----	201,636	11.8	1,709,175
Illinois:							
Merchant plants	151,315	18.4	341,976	41.5	330,073	40.1	823,364
Furnace plants	3,097,806	71.5	1,125	(2)	1,230,897	28.5	4,329,828
Total Illinois	3,249,121	63.1	343,101	6.6	1,560,970	30.3	5,153,192
Indiana:							
Merchant plants	500,095	46.0	127,088	11.7	459,372	42.3	1,086,555
Furnace plants	5,946,931	55.2	----------	-----	4,835,927	44.8	10,782,858
Total Indiana	6,447,026	54.3	127,088	1.1	5,295,299	44.6	11,869,413
Maryland:							
Furnace plant	2,596,672	64.9	----------	-----	1,402,775	35.1	3,999,447
Massachusetts:							
Merchant plant	809,458	52.6	364,780	23.7	365,075	23.7	1,539,313
Michigan:							
Merchant plants	544,224	54.5	35,488	3.6	418,045	41.9	997,757
Furnace plants	2,157,377	67.9	----------	-----	1,018,780	32.1	3,176,157
Total Michigan	2,701,601	64.7	35,488	0.9	1,436,825	34.4	4,173,914
Minnesota:							
Merchant plant	113,106	43.3	38,284	14.7	109,518	42.0	260,908
Furnace plants	670,904	60.7	26,485	2.4	408,077	36.9	1,105,466
Total Minnesota	784,010	57.4	64,769	4.7	517,595	37.9	1,366,374
New Jersey:							
Merchant plants	1,321,073	61.9	378,003	17.7	434,467	20.4	2,133,543
New York:							
Merchant plants	2,696,116	76.1	336,835	9.5	507,733	14.4	3,540,684
Furnace plants	2,719,689	61.9	759,801	17.3	915,985	20.8	4,395,475
Total New York	5,415,805	68.3	1,096,636	13.8	1,423,718	17.9	7,936,159
Ohio:							
Merchant plants	966,360	59.4	200,778	12.3	460,685	28.3	1,627,823
Furnace plants	9,875,143	69.4	381,312	2.7	3,978,920	27.9	14,235,375
Total Ohio	10,841,503	68.3	582,090	3.7	4,439,605	28.0	15,863,198
Pennsylvania:							
Merchant plants	411,492	50.7	233,317	28.8	166,568	20.5	811,377
Furnace plants	18,650,372	75.7	786,080	3.2	5,198,016	21.1	24,634,468
Total Pennsylvania	19,061,864	74.9	1,019,397	4.0	5,364,584	21.1	25,445,845
Tennessee:							
Furnace plant	70,343	20.9	236,647	70.5	28,754	8.6	335,744
Texas:							
Furnace plants	498,987	48.3	411,394	39.8	122,875	11.9	1,033,256
Utah:							
Furnace plants	1,610,534	86.6	----------	-----	250,048	13.4	1,860,582
West Virginia:							
Merchant plants	1,029,890	89.5	----------	-----	120,815	10.5	1,150,705
Furnace plants	3,402,731	81.6	----------	-----	767,794	18.4	4,170,525
Total West Virginia	4,432,621	83.3	----------	-----	888,609	16.7	5,321,230
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin:							
Merchant plants	2,010,404	70.7	----------	-----	833,475	29.3	2,843,879
Grand total	64,280,410	62.7	13,353,218	13.0	24,946,427	24.3	102,580,055
At merchant plants	10,577,606	58.6	2,996,448	16.5	4,469,344	24.8	18,043,398
At furnace plants	53,702,804	63.5	10,356,770	12.3	20,477,083	24.2	84,536,657

1/ High-volatile - dry volatile matter more than 31 percent; medium-volatile - dry volatile matter 31 percent or less and more than 22 percent; low-volatile - dry volatile matter 22 percent or less and more than 14 percent.
2/ Less than 0.05 percent.

TABLE 31. - Coal received for manufacturing oven coke in the United States in 1951, by

State where coal was consumed	Coal produced in -							
	Alabama	Arkansas	Colorado	Georgia	Illinois	Indiana	Kentucky	New Mexico
Alabama:								
Merchant plants	963,972	-------	-------	-------	-------	-------	-------	-------
Furnace plants	7,802,821	-------	-------	-------	-------	-------	-------	-------
Total Alabama	8,766,793	-------	-------	-------	-------	-------	-------	-------
California:								
Furnace plant	-------	90,146	-------	-------	-------	-------	-------	-------
Colorado:								
Furnace plant	-------	201,636	1,007,119	-------	-------	-------	-------	500,420
Illinois:								
Merchant plants	-------	-------	-------	-------	-------	-------	104,836	-------
Furnace plants	-------	-------	-------	-------	447,053	89	2,134,054	-------
Total Illinois	-------	-------	-------	-------	447,053	89	2,238,890	-------
Indiana:								
Merchant plants	-------	-------	-------	-------	-------	18,926	-------	-------
Furnace plants	-------	-------	-------	-------	-------	-------	5,256,211	-------
Total Indiana	-------	-------	-------	-------	-------	18,926	5,256,211	-------
Maryland:								
Furnace plant	-------	-------	-------	-------	-------	-------	-------	-------
Massachusetts:								
Merchant plant	-------	-------	-------	-------	-------	-------	103,243	-------
Michigan:								
Merchant plants	-------	-------	-------	-------	-------	-------	-------	-------
Furnace plants	-------	-------	-------	-------	-------	-------	1,313,382	-------
Total Michigan	-------	-------	-------	-------	-------	-------	1,313,382	-------
Minnesota:								
Merchant plant	-------	-------	-------	-------	-------	-------	-------	-------
Furnace plants	-------	-------	-------	-------	-------	-------	553,444	-------
Total Minnesota	-------	-------	-------	-------	-------	-------	553,444	-------
New Jersey:								
Merchant plants	-------	-------	-------	-------	-------	-------	2,375	-------
New York:								
Merchant plants	-------	-------	-------	-------	-------	-------	548,011	-------
Furnace plants	-------	-------	-------	-------	-------	-------	476,609	-------
Total New York	-------	-------	-------	-------	-------	-------	1,024,620	-------
Ohio:								
Merchant plants	-------	-------	-------	-------	-------	-------	275,805	-------
Furnace plants	-------	-------	-------	-------	-------	-------	2,504,772	-------
Total Ohio	-------	-------	-------	-------	-------	-------	2,780,577	-------
Pennsylvania:								
Merchant plants	-------	-------	-------	-------	-------	-------	-------	-------
Furnace plants	-------	-------	-------	-------	-------	-------	271,984	-------
Total Pennsylvania	-------	-------	-------	-------	-------	-------	271,984	-------
Tennessee:								
Furnace plant	-------	-------	-------	2,069	-------	-------	-------	-------
Texas:								
Furnace plants	174,867	-------	-------	-------	-------	-------	-------	-------
Utah:								
Furnace plants	-------	384	-------	-------	-------	-------	-------	-------
West Virginia:								
Merchant plants	-------	-------	-------	-------	-------	-------	-------	-------
Furnace plants	-------	-------	-------	-------	-------	-------	-------	-------
Total West Virginia	-------	-------	-------	-------	-------	-------	-------	-------
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin:								
Merchant plants	-------	-------	-------	-------	3,588	-------	107,737	-------
Grand total	8,941,660	292,166	1,007,119	2,069	450,641	19,015	13,652,463	500,420
At merchant plants	963,972	-------	-------	-------	3,588	18,926	1,142,007	-------
At furnace plants	7,977,688	292,166	1,007,119	2,069	447,053	89	12,510,456	500,420

States where produced and where consumed and by merchant and furnace plants, in net tons

State where coal was consumed	Coal produced in -							
	Oklahoma	Pennsylvania	Tennessee	Texas	Utah	Virginia	West Virginia	Total
Alabama:								
Merchant plants	---	37,897	---	---	---	---	225,621	1,227,490
Furnace plants	---	---	---	---	---	---	8,135	7,810,956
Total Alabama	---	37,897	---	---	---	---	233,756	9,038,446
California:								
Furnace plant	18,318	---	---	---	848,881	---	---	957,345
Colorado:								
Furnace plant	---	---	---	---	---	---	---	1,709,175
Illinois:								
Merchant plants	---	19,983	4,690	---	---	---	693,855	823,364
Furnace plants	---	---	---	---	---	117,237	1,631,395	4,329,828
Total Illinois	---	19,983	4,690	---	---	117,237	2,325,250	5,153,192
Indiana:								
Merchant plants	---	---	---	---	---	85,149	982,480	1,086,555
Furnace plants	---	---	---	---	---	1,035,647	4,491,000	10,782,858
Total Indiana	---	---	---	---	---	1,120,796	5,473,480	11,869,413
Maryland:								
Furnace plant	---	526,865	---	---	---	52,708	3,419,874	3,999,447
Massachusetts:								
Merchant plant	---	---	---	---	---	---	1,436,070	1,539,313
Michigan:								
Merchant plants	---	232,669	---	---	---	35,488	729,600	997,757
Furnace plants	---	104	---	---	---	437,061	1,425,610	3,176,157
Total Michigan	---	232,773	---	---	---	472,549	2,155,210	4,173,914
Minnesota:								
Merchant plant	---	23,570	---	---	---	---	237,338	260,908
Furnace plants	---	---	---	---	---	---	552,022	1,105,466
Total Minnesota	---	23,570	---	---	---	---	789,360	1,366,374
New Jersey:								
Merchant plants	---	7,443	---	---	---	238,346	1,885,379	2,133,543
New York:								
Merchant plants	---	864,310	87,848	---	---	367,884	1,672,631	3,540,684
Furnace plants	---	3,290,818	---	---	---	45,976	582,072	4,395,475
Total New York	---	4,155,128	87,848	---	---	413,860	2,254,703	7,936,159
Ohio:								
Merchant plants	---	---	---	---	---	225,047	1,126,971	1,627,823
Furnace plants	---	6,394,650	---	---	---	237,262	5,098,691	14,235,375
Total Ohio	---	6,394,650	---	---	---	462,309	6,225,662	15,863,198
Pennsylvania:								
Merchant plants	---	18,580	---	---	---	62,075	730,722	811,377
Furnace plants	---	20,465,956	---	60	---	---	3,896,468	24,634,468
Total Pennsylvania	---	20,484,536	---	60	---	62,075	4,627,190	25,445,845
Tennessee:								
Furnace plant	---	---	258,511	---	---	48,479	26,685	335,744
Texas:								
Furnace plants	851,600	---	6,789	---	---	---	---	1,033,256
Utah:								
Furnace plants	249,664	---	---	---	1,610,534	---	---	1,860,582
West Virginia:								
Merchant plants	---	117,543	---	---	---	---	1,033,162	1,150,705
Furnace plants	---	2,794,059	---	---	---	---	1,376,466	4,170,525
Total West Virginia	---	2,911,602	---	---	---	---	2,409,628	5,321,230
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin:								
Merchant plants	---	39,823	---	---	---	86,895	2,605,836	2,843,879
Grand total	1,119,582	34,834,270	357,838	60	2,459,415	3,075,254	35,868,083	102,580,055
At merchant plants	---	1,361,818	92,538	---	---	1,100,884	13,359,665	18,043,398
At furnace plants	1,119,582	33,472,452	265,300	60	2,459,415	1,974,370	22,508,418	84,536,657

TABLE 32. - Coke imported for consumption in the United States, 1949-51, by countries
(U. S. Department of Commerce)

Country	1949		1950		1951	
	Net tons	Value	Net tons	Value	Net tons	Value
Brazil	-------	-------	-------	-------	23	$95
Canada	277,507	$3,975,785	365,615	$4,315,394	157,631	1,872,437
Germany	-------	-------	3,140	48,676	54	821
Netherlands	-------	-------	68,810	932,245	-------	-------
Peru	-------	-------	20	198	-------	-------
United Kingdom	-------	-------	-------	-------	3,931	58,932
Total	277,507	3,975,785	437,585	5,296,513	161,639	1,932,285

TABLE 33. - Coke exported from the United States, 1949-51, by countries
(U. S. Department of Commerce)

Country	1949		1950		1951	
	Net tons	Value	Net tons	Value	Net tons	Value
North America:						
Canada	428,535	$6,341,577	361,555	$5,621,051	610,343	$9,671,585
Mexico	88,393	1,118,491	30,570	352,165	20,504	382,911
Panama	11	312	51	2,862	56	3,553
West Indies:						
Cuba	13,859	242,473	2,910	74,429	8,020	169,276
Trinidad and Tobago	194	4,567	-------	-------	207	4,572
Other North America	1,234	36,706	1,134	31,462	1,065	45,722
South America:						
Argentina	-------	-------	-------	-------	3,358	72,157
Bolivia	1,447	44,692	101	3,651	897	34,457
Brazil	1,882	78,752	-------	-------	22,359	593,337
Chile	5,929	144,107	10	350	875	21,759
Peru	-------	-------	-------	-------	839	19,156
Uruguay	-------	-------	-------	-------	1,431	46,832
Venezuela	590	22,274	187	6,714	527	18,695
Other South America	408	17,482	130	5,280	79	3,067
Europe:						
Denmark	10	214	6	118	13	329
Finland	-------	-------	-------	-------	150,987	2,964,883
France	755	33,950	-------	-------	-------	-------
Germany	-------	-------	-------	-------	20	300
Ireland	-------	-------	-------	-------	1,369	31,399
Norway	123	3,633	-------	-------	1,699	23,938
Spain	-------	-------	-------	-------	78,310	1,381,359
United Kingdom	-------	-------	-------	-------	263	5,863
Yugoslavia	-------	-------	-------	-------	121,641	2,160,840
Asia:						
Hong Kong	1,646	77,399	-------	-------	-------	-------
Philippines	2,658	138,264	1,147	61,125	296	16,355
Other Asia	582	18,032	-------	-------	457	19,298
Africa:						
Egypt	-------	-------	-------	-------	1,115	22,888
Total	548,256	8,322,925	397,801	6,159,207	1,026,730	17,714,531

TABLE 34. - Coal-chemical materials obtained from coke-oven operations in the United States in 1951 1/
(Exclusive of breeze)

Product	Production	Sales			On hand Dec. 31
		Quantity	Value		
			Total	Average	
Tar -- gallons	795,311,283	438,733,344	$43,546,155	$0.099	30,741,516
Tar derivatives:					
Creosote oil, distillate as such -- do	35,251,642	34,168,687	6,226,175	.182	1,540,890
Creosote oil, in coal-tar solution -- do	7,720,374	5,141,953	822,094	.160	371,902
Chemical oil -- do	24,896,700	23,851,391	6,562,251	.275	318,955
Phenol -- pounds	7,965,423	6,432,548	945,699	.147	156,610
Pitch of tar:					
Soft 2/ -- net tons	561,091	15,563	508,027	32.643	5,267
Hard 3/ -- do	285,345	26,635	531,605	19.959	2,602
Other tar derivatives 4/	------	------	1,887,681	------	------
Ammonia:					
Sulfate 5/ -- pounds	1,796,525,451	1,823,499,518	34,240,859	.019	82,689,087
Liquor (NH_3 content) -- do	49,755,387	45,295,654	1,791,246	.040	1,744,378
Total	------	------	36,032,105	------	------
Sulfate equivalent of all forms -- pounds	1,995,546,999	2,004,682,134	------	------	89,666,599
NH_3 equivalent of all forms -- do	498,886,750	501,170,534	------	------	22,416,650
Gas:					
Used under boilers, etc. -- M cubic feet	6/1,052,280,603	42,131,852	5,355,614	.127	------
Used in steel or allied plants -- do		428,652,885	73,824,951	.172	------
Distributed through city mains -- do		137,617,776	51,850,508	.377	------
Sold for industrial use -- do		44,948,172	7,269,226	.162	------
Total	6/1,052,280,603	653,350,685	138,300,299	.212	------
Crude light oil -- gallons	7/284,496,933	17,667,570	3,728,340	.211	4,270,644
Light oil derivatives:					
Benzol:					
Motor -- do	5,103,677	5,189,155	1,503,048	.290	355,916
All other grades -- do	172,849,275	171,023,942	57,588,706	.337	4,904,522
Toluol, crude and refined -- do	34,301,508	34,055,449	10,387,291	.305	910,124
Xylol, crude and refined -- do	9,097,044	8,847,407	2,811,636	.318	618,979
Solvent naphtha -- do	6,036,302	6,039,202	1,389,525	.230	354,679
Other light oil products -- do	6,920,644	4,694,176	616,386	.131	311,998
Total	234,308,450	229,849,331	74,296,592	.323	7,456,218
Intermediate light oil -- gallons	748,162	718,214	137,150	.191	59,839
Naphthalene, crude -- pounds	131,116,942	130,200,785	6,849,831	.053	3,948,810
Pyridine:					
Crude bases (dry basis) -- gallons	536,689	529,242	845,887	1.598	122,171
Refined or 2° C. -- pounds	1,478,750	1,484,909	1,440,530	.970	15,983
Sodium phenolate -- gallons	2,800,251	2,483,119	598,806	.241	234,243
Sulfur -- pounds	6,463,960	6,669,260	123,529	.019	1,284,000
Other coal-chemical materials 8/	------	------	551,603	------	------
Value of all coal-chemical materials sold	------	------	323,934,359	------	------

1/ Includes products of tar distillation conducted by coke-oven operators under same corporate name. 2/ Softening point less than 110° F. Includes some medium pitch-of-tar reported by 2 producers. 3/ Softening point over 160° F. 4/ Cresols, cresylic acid, fuel oil, pitch coke, road tar, tar paint, and topped tar. 5/ A small amount of sulfate from purchased synthetic ammonia was produced and sold by 1 producer but is not included. 6/ Includes gas used for heating ovens and gas wasted. 7/ 270,541,072 gallons refined by coke-oven operators to make derived products shown. 8/ Ammonium thiocyanate, picolines, secondary oil, and sodium prussiate.

TABLE 35. - Value of coal-chemical materials, coke, and breeze per ton of coke produced in the United States, 1937 and 1948-51

Product	1937	1948	1949	1950	1951
Ammonia and its compounds	$0.326	$0.545	$0.558	$0.468	$0.501
Light oil and its derivatives (including naphthalene)	.435	.686	.673	.871	1.179
Surplus gas sold or used	1.483	1.839	2.015	1.977	1.921
Tar:					
Sold	.375	.614	.520	.562	.605
Used by producers	.127	.213	.202	.129	.152
Miscellaneous products	.066	.228	.197	.224	.294
Total	2.812	4.125	4.165	4.231	4.652
Breeze produced	.162	.293	.281	.277	.275
Coke produced	5.026	12.429	13.264	13.450	14.129
Total coke and coal-chemical materials	8.000	16.847	17.710	17.958	19.056

TABLE 36.- Coal equivalent of coal-chemical materials produced at oven-coke plants in the United States, 1913, 1914, 1918, 1937, and 1949-51

Year	Quantity of coal-chemical materials				Estimated equivalent in heating value (billion B.t.u.)					Coal equivalent	
	Coke breeze (thousand net tons)	Surplus gas (billion cubic feet)	Tar (thousand gallons)	Light oil (thousand gallons)	Coke breeze	Surplus gas	Tar	Light oil	Total	Net tons	Percent this forms of coal made into coke
1913	735	64	115,145	3,000	14,700	35,200	17,272	390	67,562	2,600,000	3.8
1914	667	61	109,901	8,464	13,340	33,550	16,485	1,100	64,475	2,461,000	4.8
1918	1,999	158	263,299	87,562	39,980	86,900	39,495	11,383	177,758	6,785,000	8.0
1937	3,884	463	603,053	187,054	77,680	254,650	90,458	24,317	447,105	17,065,000	22.9
1949	4,929	546	672,407	228,754	98,582	300,300	100,861	29,738	529,481	20,209,000	22.1
1950	5,173	603	739,869	260,857	103,456	331,650	110,980	33,911	579,997	22,137,000	21.3
1951	5,126	653	795,311	284,497	102,516	359,150	119,297	36,985	617,948	23,586,000	20.7

TABLE 37. - Production and disposal of coke-oven gas in the United States in 1951, by States, in thousands of cubic feet

State	Active plants	Produced	Used in heating ovens	Surplus sold or used			Wasted
				Quantity	Value		
					Total	Average	
Alabama	7	89,042,055	40,989,672	45,637,942	$5,448,400	$0.119	2,414,441
California	1	10,409,598	44,601	9,783,128	(1)	(1)	581,869
Colorado	1	17,071,693	8,405,376	8,439,357	(1)	(1)	226,960
Illinois	8	52,195,449	17,923,211	33,398,613	5,471,906	.164	873,625
Indiana	5	119,195,358	44,041,143	74,439,602	17,464,411	.235	714,613
Maryland	1	42,876,220	12,055,645	30,015,968	(1)	(1)	804,607
Massachusetts	1	16,359,292	2,994,933	13,360,922	(1)	(1)	3,437
Michigan	4	40,671,107	6,219,845	34,334,447	5,077,555	.148	116,815
Minnesota	3	13,935,812	5,914,302	7,776,136	1,755,544	.226	245,374
New Jersey	2	23,456,551	7,350,168	16,106,383	(1)	(1)	----------
New York	8	86,513,055	25,719,172	59,803,704	19,607,302	.328	990,179
Ohio	15	158,740,967	67,102,974	88,954,714	16,288,191	.183	2,683,279
Pennsylvania	13	254,998,940	104,585,001	149,107,020	30,468,783	.204	1,306,919
Tennessee	1	2,957,703	1,274,335	1,683,053	(1)	(1)	315
Texas	2	11,367,322	4,440,292	5,528,496	(1)	(1)	1,398,534
Utah	2	23,179,190	6,022,518	14,071,989	(1)	(1)	3,084,683
West Virginia	5	58,747,389	16,639,150	39,447,440	6,386,314	.162	2,660,799
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	5	30,562,902	9,074,810	21,461,771	6,372,028	.297	26,321
Undistributed	----	------------	-----------	-----------	23,959,865	.242	----------
Total 1951	84	1,052,280,603	380,797,148	653,350,685	138,300,299	.212	18,132,770
At merchant plants	28	187,996,768	50,322,750	134,632,879	47,098,386	.350	3,041,139
At furnace plants	56	864,283,835	330,474,398	518,717,806	91,201,913	.176	15,091,631
Total 1950	85	979,592,988	360,583,554	602,815,977	132,247,656	.219	16,193,457

1/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 38. - Disposal of surplus coke-oven gas in the United States in 1951, by States, in thousands of cubic feet

State	Used by producers -					
	Under boilers			In steel or allied plants		
	Quantity	Value		Quantity	Value	
		Total	Average		Total	Average
Alabama	9,482,223	$1,113,628	$0.117	28,486,213	$3,531,504	$0.124
California	73,131	(1)	(1)	9,709,997	(1)	(1)
Colorado	----------	----------	-----	8,439,357	(1)	(1)
Illinois	5,153,226	581,297	.113	7,741,839	(1)	(1)
Indiana	3,801,144	(1)	(1)	52,367,570	10,537,096	.201
Maryland	----------	----------	-----	30,015,968	(1)	(1)
Massachusetts	723	(1)	(1)	----------	----------	-----
Michigan	1,592,602	(1)	(1)	30,541,244	4,421,042	.145
Minnesota	1,037,180	67,082	.065	3,320,879	(1)	(1)
New Jersey	----------	----------	-----	376	(1)	(1)
New York	1,681,281	198,679	.118	20,668,443	(1)	(1)
Ohio	5,537,397	994,977	.180	71,485,971	13,264,512	.186
Pennsylvania	4,873,665	722,569	.148	114,395,051	(1)	(1)
Tennessee	381,162	(1)	(1)	----------	----------	-----
Texas	3,777,586	(1)	(1)	1,679,891	(1)	(1)
Utah	23,945	(1)	(1)	13,663,719	(1)	(1)
West Virginia	2,664,149	312,889	.117	36,136,367	(1)	(1)
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	2,052,438	266,728	.130	----------	----------	-----
Undistributed	----------	1,097,765	.114	----------	42,070,797	.171
Total 1951	42,131,852	5,355,614	.127	428,652,885	73,824,951	.172
At merchant plants	9,331,332	929,113	.100	7,032,098	1,567,057	.223
At furnace plants	32,800,520	4,426,501	.135	421,620,787	72,257,894	.171
Total 1950	35,856,065	4,440,208	.124	378,271,394	65,091,633	.172

State	Sold					
	Distributed through city mains			For industrial purposes		
	Quantity	Value		Quantity	Value	
		Total	Average		Total	Average
Alabama	6,002,980	(1)	(1)	1,666,526	(1)	(1)
California	----------	----------	-----	----------	----------	-----
Colorado	----------	----------	-----	----------	----------	-----
Illinois	20,448,476	$3,476,409	$0.170	55,072	(1)	(1)
Indiana	7,962,975	3,920,599	.492	10,307,913	(1)	(1)
Maryland	----------	----------	-----	----------	----------	-----
Massachusetts	13,360,199	(1)	(1)	----------	----------	-----
Michigan	----------	----------	-----	2,200,601	(1)	(1)
Minnesota	2,353,426	(1)	(1)	1,064,651	(1)	(1)
New Jersey	16,106,007	(1)	(1)	----------	----------	-----
New York	36,998,551	14,745,372	.399	455,429	(1)	(1)
Ohio	2,304,366	665,844	.289	9,626,980	$1,362,858	$0.142
Pennsylvania	21,044,536	8,523,068	.405	8,793,768	(1)	(1)
Tennessee	----------	----------	-----	1,301,891	(1)	(1)
Texas	----------	----------	-----	71,019	(1)	(1)
Utah	----------	----------	-----	384,325	(1)	(1)
West Virginia	----------	----------	-----	646,924	(1)	(1)
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	11,036,260	5,057,207	.458	8,373,073	1,048,093	.125
Undistributed	----------	15,462,009	.409	----------	4,858,275	.180
Total 1951	137,617,776	51,850,508	.377	44,948,172	7,269,226	.162
At merchant plants	98,284,962	41,356,625	.421	19,984,487	3,245,591	.162
At furnace plants	39,332,814	10,493,883	.267	24,963,685	4,023,635	.161
Total 1950	149,429,729	56,504,724	.378	39,258,789	6,211,091	.158

1/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 39. - Coke-oven ammonia produced and sold in the United States in 1951, by States, in pounds

State	Active plants	Produced			
		Sulfate equivalent	Per ton of coal coked	As sulfate	As liquor (NH_3 content)
Alabama	7	201,153,376	22.97	192,925,732	2,056,911
California	1	24,353,452	26.34	24,353,452	----------
Colorado	1	31,453,440	21.66	31,453,440	----------
Illinois	6	84,108,757	18.51	84,108,757	----------
Indiana	5	202,010,625	16.40	176,329,421	6,420,301
Maryland	1	80,415,625	20.33	80,415,625	----------
Massachusetts	1	27,683,060	17.73	27,683,060	----------
Michigan	4	75,121,896	18.77	24,750,280	12,592,904
Minnesota	3	23,461,213	17.52	23,461,213	----------
New Jersey	2	40,476,095	19.05	40,476,095	----------
New York	8	157,369,369	19.44	131,860,445	6,377,231
Ohio	15	305,812,471	19.28	250,282,763	13,882,427
Pennsylvania	13	520,971,742	20.73	518,240,422	682,830
Tennessee	1	6,998,120	21.73	6,998,120	----------
Texas	2	22,241,204	21.35	22,241,204	----------
Utah	2	44,223,264	22.86	44,223,264	----------
West Virginia	4	98,952,873	20.61	98,952,873	----------
Connecticut, Kentucky, Missouri, and Wisconsin	4	48,740,417	19.31	17,769,285	7,742,783
Total 1951	80	1,995,546,999	19.82	1,796,525,451	49,755,387
At merchant plants	25	348,454,124	20.11	222,153,544	31,575,145
At furnace plants	55	1,647,092,875	19.76	1,574,371,907	18,180,242
Total 1950	79	1,849,127,582	19.89	1,662,032,906	46,773,669

State	Sold as -				On hand Dec. 31	
	Sulfate		Liquor (NH_3 content)		Sulfate	Liquor (NH_3 content)
	Quantity	Value	Quantity	Value		
Alabama	200,626,728	$4,136,003	2,023,150	(1)	1,077,839	46,773
California	24,326,820	(1)	----------	----------	273,034	----------
Colorado	31,613,465	(1)	----------	----------	5,679,535	----------
Illinois	87,193,080	1,610,939	----------	----------	2,472,608	----------
Indiana	185,725,452	3,449,030	5,935,196	221,361	12,237,157	452,352
Maryland	78,848,639	(1)	----------	----------	4,136,160	----------
Massachusetts	28,495,280	(1)	----------	----------	276,660	----------
Michigan	24,740,681	(1)	10,613,295	(1)	291,769	419,674
Minnesota	23,033,028	428,059	----------	----------	1,714,806	----------
New Jersey	39,461,000	(1)	----------	----------	3,137,495	----------
New York	127,761,880	2,365,902	6,071,885	(1)	9,917,585	100,803
Ohio	253,670,810	4,520,233	12,371,053	473,191	11,670,716	410,781
Pennsylvania	525,607,701	9,303,536	648,648	(1)	23,996,900	64,842
Tennessee	7,024,800	(1)	----------	----------	162,574	----------
Texas	22,935,301	(1)	----------	----------	211,922	----------
Utah	42,486,588	(1)	----------	----------	3,136,750	----------
West Virginia	101,201,565	1,786,671	----------	----------	1,911,577	----------
Connecticut, Kentucky, Missouri, and Wisconsin	18,746,700	390,405	7,632,427	300,257	384,000	249,153
Undistributed	----------	6,250,081	----------	796,437	----------	----------
Total 1951	1,823,499,518	34,240,859	45,295,654	1,791,246	82,689,087	1,744,378
At merchant plants	225,359,920	4,430,375	34,161,103	1,352,875	9,112,477	1,129,983
At furnace plants	1,598,139,598	29,810,484	11,134,551	438,371	73,576,610	614,395
Total 1950	1,682,331,655	29,755,089	43,162,889	1,567,499	115,377,093	1,273,501

1/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 40. - Coke-oven tar produced, used by producers, and sold in the United States in 1951, by States, in gallons

State	Produced		Used by producers -			
	Total	Per ton of coal coked	For refining or topping	As fuel under boilers	In open hearth or allied plants	Otherwise
Alabama	66,429,015	7.59	1,347,213	672,023	23,203,636	179,647
California	9,141,161	9.89	9,238,968	---------	---------	---------
Colorado	13,855,357	9.54	12,874,736	---------	960,229	15,350
Illinois	34,534,267	6.62	12,869,100	414,953	---------	1,052,700
Indiana	74,218,027	6.02	12,315,317	---------	3,409,383	126,091
Maryland	31,027,571	7.85	---------	---------	20,453,521	---------
Massachusetts	11,839,783	7.58	---------	---------	---------	---------
Michigan	26,725,458	6.68	---------	---------	---------	1,500
Minnesota	9,014,502	6.73	---------	---------	4,140,322	---------
New Jersey	17,208,469	8.10	---------	---------	---------	---------
New York	63,424,348	7.83	18,865,580	---------	---------	5,850
Ohio	116,072,763	7.32	3,698,439	634,393	15,689,496	223,009
Pennsylvania	222,081,780	8.84	162,359,109	83,335	26,672,350	436,765
Tennessee	2,356,975	7.32	---------	---------	---------	---------
Texas	6,658,815	6.39	---------	---------	---------	120
Utah	20,678,955	10.69	---------	---------	12,102,126	125
West Virginia	49,160,591	9.16	18,723,580	---------	---------	---------
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	20,883,446	7.27	---------	---------	---------	26,972
Total 1951	795,311,283	7.78	252,292,042	1,804,704	106,631,063	2,068,129
At merchant plants	140,232,136	7.65	1,347,213	---------	---------	32,822
At furnace plants	655,079,147	7.80	250,944,829	1,804,704	106,631,063	2,035,307
Total 1950	739,868,767	7.79	203,320,038	2,612,833	95,280,053	2,842,043

State	Sold					On hand Dec. 31
	For use as fuel 1/	For refining into tar products	Total			
			Quantity	Value		
				Total	Average	
Alabama	---------	40,382,033	40,382,033	$3,801,684	$0.094	2,291,258
California	---------	---------	---------	---------	-----	233,245
Colorado	---------	44,482	44,482	(2)	(2)	472,654
Illinois	---------	29,535,689	29,535,689	2,999,255	.102	2,058,394
Indiana	---------	57,812,399	57,812,399	5,980,445	.103	4,476,751
Maryland	---------	10,403,164	10,403,164	(2)	(2)	2,083,599
Massachusetts	---------	11,789,975	11,789,975	(2)	(2)	198,823
Michigan	---------	26,492,196	26,492,196	2,540,360	.096	1,495,054
Minnesota	---------	4,851,007	4,851,007	(2)	(2)	748,023
New Jersey	---------	17,107,449	17,107,449	(2)	(2)	660,400
New York	182,360	44,183,931	44,366,291	4,500,834	.101	2,431,223
Ohio	4,756,159	88,498,302	93,254,461	9,536,891	.102	4,298,681
Pennsylvania	100,547	32,065,537	32,166,084	3,273,206	.102	6,730,230
Tennessee	---------	2,343,936	2,343,936	(2)	(2)	50,252
Texas	---------	6,715,277	6,715,277	(2)	(2)	340,766
Utah	---------	9,336,674	9,336,674	(2)	(2)	670,142
West Virginia	9,585,172	21,726,138	31,311,310	3,202,422	.102	643,189
Connecticut, Kentucky, Missouri, Rhode Island, and Wisconsin	---------	20,820,917	20,820,917	1,968,566	.095	858,832
Undistributed	---------	---------	---------	5,742,492	.092	---------
Total 1951	14,624,238	424,109,106	438,733,344	43,546,155	.099	30,741,516
At merchant plants	---------	138,834,832	138,834,832	13,025,798	.094	4,534,339
At furnace plants	14,624,238	285,274,274	299,898,512	30,520,357	.102	26,207,177
Total 1950	31,317,586	403,928,257	435,245,843	37,558,999	.086	30,138,144

1/ Comprises 14,400,548 gallons sold to affiliated companies and 223,690 gallons sold to other purchasers.
2/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 41. - Coke-oven crude light oil produced in the United States and derived products obtained and sold in 1951, by States, in gallons

State	Active plants	Produced		Refined on premises 1/	Derived products			On hand Dec. 31
		Total	Per ton of coal coked		Produced	Sold 2/		
						Quantity	Value	
Alabama	7	22,801,254	2.60	22,405,637	19,683,613	19,095,876	$5,967,470	335,798
California	1	3,040,203	3.29	3,037,365	2,566,379	2,333,441	(3)	18,404
Colorado	1	4,586,859	3.16	4,534,717	4,013,146	3,922,010	(3)	43,381
Illinois	7	13,210,119	2.58	9,169,957	7,760,638	7,790,532	2,504,232	310,243
Indiana	5	29,540,988	2.40	30,376,909	27,169,464	26,214,633	8,340,655	396,604
Maryland	1	13,111,116	3.32	15,685,240	13,681,765	13,796,082	(3)	192,444
Michigan	4	9,896,944	2.47	5,496,984	4,842,027	4,389,989	1,487,354	287,279
New York	8	22,694,004	2.80	31,164,743	27,626,181	27,792,746	9,517,062	293,291
Ohio	15	46,390,960	2.93	41,828,640	33,525,523	33,264,755	10,871,509	533,923
Pennsylvania	13	76,529,392	3.09	74,493,486	66,248,025	65,854,154	20,478,096	1,287,810
Tennessee	1	834,376	2.59	995,151	900,712	401,878	(3)	3,910
Texas	2	2,662,057	2.56	2,663,937	2,379,451	2,348,553	(3)	6,439
Utah	2	7,571,293	3.91	7,563,580	5,989,785	5,992,421	(3)	86,716
West Virginia	5	17,036,657	3.17	15,121,388	12,969,876	11,756,212	3,962,220	63,362
Connecticut, Kentucky, Massachusetts, Minnesota, Missouri, New Jersey, and Wisconsin	8	14,590,711	2.25	6,003,338	4,951,865	4,896,049	1,722,979	411,040
Undistributed	----	----	----	----	----	----	9,445,015	----
Total 1951	80	284,496,933	2.83	270,541,072	234,308,450	229,849,331	74,296,592	4,270,644
At merchant plants	26	40,640,656	2.27	31,149,229	27,546,862	25,733,954	8,487,784	1,097,105
At furnace plants	54	243,856,277	2.96	239,391,843	206,761,588	204,115,377	65,808,808	3,173,539
Total 1950	80	260,856,875	2.81	244,872,337	213,746,380	206,828,342	50,945,690	4,866,091

1/ Comprises 266,843,081 gallons of crude light oil from own production and 3,697,991 gallons purchased from other coke plants. 2/ Excludes 17,667,570 gallons of crude light oil valued at $3,728,340 sold as such. 3/ Included with "Undistributed" to avoid disclosure of individual operations.

TABLE 42. - Trend in yields of products obtained from refining crude light oil at oven-coke plants in the United States, 1937 and 1941-51, in percent

Year	Benzol		Toluol, crude and refined	Xylol, crude and refined	Solvent naphtha	Other light-oil products
	Motor	All other grades				
1937	52.5	11.9	11.5	2.5	3.1	4.5
1941	47.2	16.8	13.0	3.4	2.3	3.6
1942	26.8	35.3	13.4	3.9	2.2	3.8
1943	8.6	53.9	13.1	3.6	2.1	3.6
1944	7.1	56.6	12.9	3.3	2.1	3.5
1945	12.3	53.9	11.5	3.2	2.0	3.3
1946	13.8	55.3	8.3	3.0	2.2	3.8
1947	6.5	60.1	10.9	3.0	2.3	3.5
1948	3.7	61.7	11.7	3.0	2.4	3.3
1949	9.5	55.6	12.5	3.3	2.3	3.2
1950	3.2	63.1	12.5	3.3	2.5	2.8
1951	1.9	63.9	12.7	3.4	2.2	2.6

TABLE 43. - Production of benzol and toluol, by grades, at oven-coke plants in the United States, 1941-51, in gallons

Year	Benzol				Toluol		
	Motor	Nitration or 1° C.	Pure commercial or 2° C.	All other	Nitration or 1° C.	Pure commercial or 2° C.	All other
1941	106,372,000	15,414,500	18,286,400	4,182,600	14,689,300	13,268,500	1,378,900
1942	64,797,600	25,624,400	53,617,900	6,014,700	25,160,200	5,044,800	2,109,600
1943	21,267,900	35,047,800	93,246,600	4,144,800	27,152,300	2,394,700	2,725,600
1944	18,556,600	41,285,800	102,436,500	3,187,600	29,771,100	2,149,600	1,607,500
1945	28,788,100	39,166,500	86,237,300	1,266,700	23,355,400	2,219,700	1,494,200
1946	27,398,900	35,739,300	71,681,700	2,308,000	12,518,000	2,796,400	1,205,400
1947	15,802,700	42,475,300	100,111,800	2,470,800	20,514,100	4,989,500	892,800
1948	9,014,300	43,541,200	103,356,300	3,101,400	22,899,700	5,280,800	267,800
1949	20,923,700	28,988,700	91,717,300	2,035,600	20,808,300	6,317,200	545,100
1950	7,727,300	41,324,900	110,114,300	3,027,200	22,108,600	7,785,800	770,400
1951	5,103,700	45,057,500	123,315,700	4,476,100	24,772,500	8,689,700	839,300

TABLE 44. - Crude naphthalene produced and sold by coke-plant operators in the United States, 1937 and 1947-51

Year	Produced (pounds)	Sold			
		Pounds	Value		
			Total	Average per pound	Average per ton of oven coke
1937	60,797,108	60,315,581	$1,182,992	$0.020	$0.024
1947	98,654,485	95,315,607	3,128,389	.033	.047
1948	103,431,811	100,442,631	4,619,374	.046	.068
1949	70,823,436	56,643,829	2,654,815	.047	.044
1950	99,729,587	102,657,724	4,425,894	.043	.066
1951	131,116,942	130,200,785	6,849,831	.053	.095

TABLE 45. - Production of coke, breeze, and coal-chemical materials in the United States at oven-coke plants owned by city gas companies (public utilities) 1/ compared with all other oven-coke plants, 1950-51

Product	1950			1951		
	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)	Total	Plants not owned by city gas companies	Plants owned by city gas companies (public utilities)	Total
Number of active plants	73	12	85	75	9	84
Coke:						
Production — net tons	63,071,875	3,818,743	66,890,618	68,313,148	3,674,024	71,987,172
Value	$840,692,718	$58,974,609	$899,667,327	$955,730,967	$61,334,584	$1,017,065,551
Average per ton	$13.33	$15.44	$13.45	$13.99	$16.69	$14.13
Breeze:						
Production — net tons	4,815,363	357,395	5,172,758	4,805,349	320,485	5,125,834
Sales — do	1,388,594	18,447	1,407,041	1,227,822	9,966	1,237,788
Value of sales	$5,445,665	$68,744	$5,514,409	$5,754,176	$46,024	$5,800,200
Average per ton	$3.92	$3.73	$3.92	$4.69	$4.62	$4.69
Coal charged into ovens:						
Bituminous — net tons	89,316,805	5,440,230	94,757,035	96,852,479	5,177,802	102,030,281
Anthracite — do	137,797	31,478	169,275	217,714	19,422	237,136
Total — do	89,454,602	5,471,708	94,926,310	97,070,193	5,197,224	102,267,417
Value	$767,420,831	$55,165,485	$822,586,316	$860,976,525	$53,166,177	$914,142,702
Average per ton	$8.58	$10.08	$8.67	$8.87	$10.23	$8.94
Coke -						
Used by producers:						
Net tons	41,888,637	1,522,349	43,410,986	45,763,077	871,270	46,634,347
Value	$541,587,521	$20,110,494	$561,698,015	$608,298,343	$11,836,679	$620,135,022
Sold:						
Net tons	21,645,617	2,454,902	24,100,519	22,239,814	2,722,202	24,962,016
Value	$306,065,821	$41,096,836	$347,162,657	$343,178,010	$48,128,733	$391,306,743
Coal-chemical materials:						
Tar:						
Production — gallons	694,028,547	45,840,220	739,868,767	751,712,284	43,598,999	795,311,283
Sales — do	389,468,646	45,777,197	435,245,843	395,114,544	43,618,800	438,733,344
Value of sales	$33,895,971	$3,663,028	$37,558,999	$39,177,897	$4,368,258	$43,546,155
Ammonia:						
Production (NH_3 equivalent of all forms) - pounds	438,832,283	23,449,612	462,281,895	476,751,230	22,135,520	498,886,750
Liquor (NH_3 content):						
Production — do	44,734,763	2,038,906	46,773,669	47,895,032	1,860,355	49,755,387
Sales — do	41,603,060	1,559,829	43,162,889	43,825,653	1,470,001	45,295,654
Value of sales	$1,516,954	$50,545	$1,567,499	$1,743,003	$48,243	$1,791,246
Sulfate:						
Production — pounds	1,576,390,082	85,642,824	1,662,032,906	1,715,424,792	81,100,659	1,796,525,451
Sales — do	1,598,907,955	83,423,700	1,682,331,655	1,739,872,378	83,627,140	1,823,499,518
Value of sales	$28,185,891	$1,569,198	$29,755,089	$32,643,149	$1,597,710	$34,240,859
Gas:						
Production — M cubic feet	919,264,582	60,328,406	979,592,988	995,178,072	57,102,531	1,052,280,603
Disposal of surplus:						
Used under boilers, etc.:						
M cubic feet	35,152,385	703,680	35,856,065	42,122,902	8,950	42,131,852
Value	$4,327,619	$112,589	$4,440,208	$5,352,732	$2,882	$5,355,614
Average per M cubic feet	$0.123	$0.160	$0.124	$0.127	$0.322	$0.127
Used in steel or allied plants:						
M cubic feet	378,268,133	3,261	378,271,394	428,650,905	1,980	428,652,885
Value	$65,089,728	$1,905	$65,091,633	$73,823,716	$1,235	$73,824,951
Average per M cubic feet	$0.172	$0.584	$0.172	$0.172	$0.624	$0.172
Distributed through city mains:						
M cubic feet	96,912,152	52,517,577	149,429,729	87,564,497	50,053,279	137,617,776
Value	$33,334,247	$23,170,477	$56,504,724	$32,892,440	$18,958,068	$51,850,508
Average per M cubic feet	$0.344	$0.441	$0.378	$0.376	$0.379	$0.377
Sold for industrial use:						
M cubic feet	37,421,513	1,837,276	39,258,789	43,092,408	1,855,764	44,948,172
Value	$5,382,212	$828,879	$6,211,091	$6,458,278	$810,948	$7,269,226
Average per M cubic feet	$0.144	$0.451	$0.158	$0.150	$0.437	$0.162
Crude light oil:						
Production — gallons	252,042,937	8,813,938	260,856,875	277,374,026	7,122,907	284,496,933
Sales — do	15,010,140	4,652,999	19,663,139	12,976,931	4,690,639	17,667,570
Value of sales	$2,352,159	$521,614	$2,873,773	$2,877,774	$850,566	$3,728,340
Light oil derivatives:						
Production — gallons	209,795,642	3,950,738	213,746,380	231,809,205	2,499,245	234,308,450
Sales — do	203,054,314	3,774,028	206,828,342	227,293,164	2,556,167	229,849,331
Value of sales	$50,178,099	$767,591	$50,945,690	$73,555,727	$740,865	$74,296,592
Naphthalene, crude:						
Production — pounds	98,971,548	758,039	99,729,587	130,109,895	1,007,047	131,116,942
Sales — do	101,899,685	758,039	102,657,724	129,193,738	1,007,047	130,200,785
Value of sales	$4,398,406	$27,488	$4,425,894	$6,809,039	$40,792	$6,849,831
All other coal-chemical materials, value	$14,852,695	$142,855	$14,995,550	$21,013,627	$167,410	$21,181,037

1/ Coke ovens built by city gas companies, some of which are operated in conjunction with coal- and water-gas plants. Does not include independent oven-coke plants that may sell gas to public-utility companies for distribution.

Prepared by Maxine M. Otero, J. A. DeCarlo, and J. A. Corgan, Chief, Anthracite and Coke Sections, under the supervision of T. W. Hunter, Chief, Coal Branch, Fuels and Explosives Division.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

JUL 28 1952
UNIVERSITY OF ILLINOIS

OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

For immediate release

MINERAL MARKET REPORT
MMS NO. 2087

LEAD AND ZINC PIGMENTS AND ZINC SALTS IN 1951

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

Moderate declines in shipments of lead and zinc pigments and zinc salts featured the industry in 1951, according to the Bureau of Mines, United States Department of the Interior. Decreases in shipments of zinc pigments ranged from 3 percent for lithopone to 31 percent for leaded zinc oxide. Litharge and white lead (dry and in oil) declined 13 percent and 22 percent, respectively, while red lead shipments were approximately the same as in 1950. Zinc chloride and zinc sulfate shipments declined 6 percent and 2 percent, respectively. Decreases in shipments of pigments and salts are attributed partly to decreases in the volume of business in industries that are important consumers of these products; passenger automobile production dropped 20 percent in 1951 (truck output rose 7 percent) and consumption of natural and synthetic rubber declined 3 percent (natural rubber fell 37 percent and synthetic rubber increased 41 percent) compared with 1950. The value of sales of varnish and lacquer materials was 5 percent greater than in 1950, value of public construction increased 27 percent, and value of private construction was approximately the same as in 1950. Paint and construction gains, of course, in part reflected rising material and labor costs.

The supply of lead and zinc, chief raw materials of the pigments industry, was smaller in 1951 than in 1950, and the demand for these metals continued high, causing a reduction in quantities available for the manufacture of pigments and partly accounting for the decreases in shipments of pigments. Ceiling prices were established for lead and zinc on January 26, 1951 at the highest price (for each seller) at which sales were made between December 19, 1950 and January 25, 1951. Thus a number of ceiling prices were maintained for both lead and zinc. The bulk of lead and zinc sales, however, was at 17 cents per pound and 17.50 cents, respectively. These prices were for common lead, New York, and Prime Western grade slab zinc, East St. Louis, and remained in effect until October 2, 1951 when the Office of Price Stabilization permitted rises of 2 cents per pound for both metals. Pigments prices are discussed under Prices.

Prepared July 17, 1952 by Robert L. Mentch, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Lead and zinc pigments and zinc salts shipped by domestic manufacturers in the United States, 1950-51

	1950			1951		
	Short tons	Value		Short tons	Value	
		Total	Per ton		Total	Per ton
Red lead	35,072	$11,013,908	$314	35,352	$14,025,182	$397
Litharge	177,658	51,887,453	292	154,753	59,287,262	383
White lead:						
Dry	28,506	9,553,687	335	23,359	9,952,883	426
In oil 1/	16,670	7,403,032	444	12,056	6,007,291	498
Basic lead sulfate or sublimed lead:						
White	(2)	(2)	(2)	(2)	(2)	(2)
Blue	(2)	(2)	(2)	(2)	(2)	(2)
Zinc oxide	160,829	41,439,269	258	147,716	45,948,219	311
Leaded zinc oxide	63,973	16,752,888	262	44,341	14,179,993	320
Lithopone	105,650	13,129,363	124	102,837	14,470,742	141
Zinc chloride, 50° Baume	64,564	4,703,250	73	60,730	5,152,382	85
Zinc sulfate	23,912	3,124,413	131	23,524	3,769,825	160

1/ Weight of white lead only but value of paste.
2/ Bureau of Mines not at liberty to publish figures.

Shipments of zinc sulfate by uses, 1950-51, in short tons

Industry	1950		1951	
	Gross weight	Dry basis	Gross weight	Dry basis
Rayon	11,217	8,322	10,073	7,925
Agriculture	5,841	4,880	5,588	4,847
Chemicals	1,879	1,377	2,871	2,243
Textile dyeing and printing	145	129	1,400	1,163
Flotation reagents	952	727	858	736
Glue	579	464	396	337
Electrogalvanizing	324	203	190	129
Paints and varnish processing	189	119	32	20
Other	2,786	1,820	2,116	1,274
Total	23,912	18,041	23,524	18,674

Shipments of lead and zinc pigments, by uses, 1950-51

	1950 Short tons	1951 Short tons
White lead (dry and in oil)		
Paints	38,920	28,718
Ceramics	1,815	1,548
Other 1/	4,441	5,149
	45,176	35,415
Red lead		
Storage batteries	17,478	16,722
Paints	14,103	14,740
Ceramics	981	834
Other	2,510	3,056
	35,072	35,352
Litharge		
Storage batteries 2/	105,558	94,064
Ceramics	27,771	22,815
Chrome pigments	10,017	11,117
Oil refining	6,488	6,068
Insecticides	10,651	5,691
Varnish	4,347	5,584
Rubber	3,047	2,641
Floor coverings	220	1,772
Other	9,559	5,001
	177,658	154,753
Basic lead sulfate		
Paints	(4)	(4)
Rubber		
Storage batteries		
Other		

	1950 Short tons	1951 Short tons
Lithopone		
Paint, varnish and lacquers	78,177	76,614
Floor coverings and textiles	13,242	9,434
Rubber	4,092	3,295
Other	10,139	13,494
	105,650	102,837
Zinc oxide		
Rubber	82,944	71,507
Paints	39,699	32,934
Ceramics	12,679	10,324
Coated fabrics and textiles 3/	6,303	7,265
Floor coverings	3,670	3,114
Other	15,534	22,572
	160,829	147,716
Leaded zinc oxide		
Paints	63,002	43,678
Rubber	240	82
Other	731	581
	63,973	44,341

1/ Includes 1,257 tons in 1950 and 1,003 tons in 1951 for plasticizers and stabilizers.

2/ In addition 80,000 tons of black or gray oxide in 1950 and 77,000 tons in 1951 were produced by makers of storage batteries in their own plants.

3/ Includes 4,850 tons in 1950 and 5,275 tons in 1951 for rayon.

4/ Bureau of Mines not at liberty to publish figures.

The supply-demand situation in lead led to a National Production Authority Order, M-38, effective February 16, 1951, which set forth limitations on inventories of lead and materials containing lead, other than ores and concentrates. This order was amended on May 28 and again on July 26 to set forth certain limitations on the acceptance of rated orders so as to provide for the equitable distribution of such orders, provide for the creation of a set-aside reserve of pig lead to meet emergency situations, and establish limitations on the use of lead and lead products.

National Production Authority Order, M-15, effective December 1, 1950, restricted the civilian use of zinc metal and zinc metal products in 1951 to an average quarterly rate of 80 percent of the use during the first 6 months of 1950. Rated orders and mandatory NPA orders were to be in addition to the civilian limitation. Inventories were restricted to a 45-day supply or to a "practicable minimum working inventory", whichever was less. This order was amended on June 15, 1951 to restrict use of Special High Grade zinc during the calendar quarter commencing July 1, and each calendar quarter thereafter, to an average quarterly rate of 70 percent of the use during the base period; usage of all other zinc was to be the same as stated in the earlier order. Under NPA Order M-9, effective November 16, 1950, producers of zinc, zinc oxide and other zinc products were not required to accept rated orders for shipment in one month in excess of 10 percent of production.

Shipments of white lead (dry) and of the "in oil" variety dropped 18 percent and 28 percent, respectively, from 1950 totals. Shipments of the "in oil" variety, moreover, were the smallest by far since long before the beginning of the present century. White lead (dry) shipments, with the exception of 1949 and 1918, were also smaller than at any time in more than 50 years. Litharge shipments decreased 13 percent in 1951 but were well above average yearly shipments during World War II. Shipments of red lead were approximately the same as in 1950 but were considerably lower than in World War II years.

Zinc oxide (lead-free) shipments, although declining 8 percent in 1951, were comparable in quantity to shipments during the World War II period. Leaded zinc oxide shipments decreased 31 percent from the previous year. Lithopone shipments were 3 percent below the 1950 total and were considerably lower than all years from 1925-48, inclusive.

Shipments of zinc salts changed relatively little compared with 1950; zinc chloride decreased 6 percent and zinc sulfate fell 2 percent.

Prices. - Lead and zinc pigment price quotations maintained their historically close relationship to pig lead and slab zinc prices throughout the year. There were practically no fluctuations, owing to the imposition of ceiling prices by the Office of Price Stabilization early in the year. Quotations advanced up to 2 cents a pound when OPS permitted a 2-cent rise in lead and zinc metal prices in October. Zinc-pigment prices reached all-time highs during the year. Lead-pigment prices, although relatively high, did not attain the record levels of 1948 and early 1949.

New highs were also recorded for zinc chloride and zinc sulfate; average values were 16 and 22 percent, respectively, above the peaks established in 1950.

Lead and zinc pigment prices in 1951, in cents per pound

	Beginning	End
White lead, basic carbonate, bags, less carlots, shipping point, freight allowed	19.50	21.10
Red lead, 95% Pb_3O_4 or less, barrels, less carlots, shipping point, freight allowed	20.75	22.55 - 22.57
Litharge, commercial, powdered, barrels, less carlots, shipping point, freight allowed	19.75	21.65
Zinc oxide, American process, commercial, lead-free, bags, less carlots, delivered	17.00	18.60
Zinc oxide, leaded, bags, less carlots, delivered 5%	17.00	18.60
35%	17.62	19.15
50%	17.87	19.35
Lithopone, ordinary, bags, less carlots, delivered	8.25 - 8.50	8.90

Foreign trade. - Foreign trade in lead and zinc pigments and salts is of relatively minor importance in relation to domestic shipments of these commodities. Imports of white lead (basic carbonate) and litharge, the chief lead entries, were 7 and 1 percent, respectively, of domestic shipments, and imports of zinc oxide, lithopone, and zinc chloride, the outstanding zinc items of trade, each amounted to only 1 percent of domestic shipments.

Lithopone and zinc oxide are the pigments exported in greatest tonnages from the United States. Exports of these pigments increased to 20,473 tons and 8,895 tons, respectively, in 1951 compared with 1950 exports of 9,357 tons and 3,094 tons, respectively. Tonnages given amount to 20 and 6 percent, respectively, of total shipments.

Lead pigments imported for consumption in the United States in 1950-51, in short tons

	1950	1951
Basic carbonate white lead----------------	944	2,575
Red lead----------------------------------	70	215
Litharge----------------------------------	12	1,855
Suboxide of lead--------------------------	57	53

Zinc pigments imported for consumption in the United States in 1950-51, in short tons

	1950	1951
Zinc oxide (dry and in oil)---------------	5,095	1,782
Lithopone---------------------------------	1,201	794

Lead pigments exported in 1950-51, in short tons

	1950	1951
White lead--------------------------------	815	767
Red lead----------------------------------	549	585
Litharge----------------------------------	1,612	1,038

Zinc pigments exported in 1950-51, in short tons

	1950	1951
Zinc oxide--------------------------------	3,094	8,895
Lithopone---------------------------------	9,357	20,473

Zinc oxide and lithopone exported from the United States in 1951, by principal countries, in short tons

Zinc oxide		Lithopone	
Cuba	757	Cuba	710
Canada	567	Canada	4,724
Colombia	123	Colombia	240
Indonesia	152	Indonesia	28
Venezuela	124	Venezuela	224
Philippines	286	Philippines	431
Brazil	1,370	Brazil	4,335
Norway	190	Uruguay	280
Uruguay	97	Mexico	1,953
Mexico	52	Switzerland	66
Switzerland	32	Israel	163
Israel	79	Union of South Africa	766
Union of South Africa	156	New Zealand	347
New Zealand	1,617	United Kingdom	840
United Kingdom	214	Ireland	1,113
Ireland	94	France	1,110
France	1,099	Japan	110
Japan	369	Chile	1,195
Chile	66	Netherlands	59
Sweden	239	Belgium and Luxembourg	20
Netherlands	160	India	916
Belgium and Luxembourg	626	British Malaya	129
British Malaya	140	Other countries	714
Other countries	286		
Total	8,895	Total	20,473

erior, Duplicating Section, Washington, D. C.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

For immediate release

MINERAL MARKET REPORT
M. M. S. NO. 2088

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

CADMIUM IN 1951

Consumption of cadmium in the United States in 1951 was curtailed sufficiently to enable supplies to meet all military and essential civilian requirements despite a 10 percent decrease in primary production. Apparent consumption declined from 9,545,502 pounds in 1950 to 7,172,498 pounds in 1951 owing largely to restrictions placed on end uses of cadmium by the National Production Authority. The reduction in consumption more than offset the decrease in production, and, as a result, stocks increased substantially. Net exports of metallic cadmium totaled 516,168 pounds in 1951, a reversal of position from 1950 when there was a net import balance of 277,182 pounds. The market price for commercial sticks remained unchanged at $2.55 a pound throughout the year. The Federal Government continued purchases for the National Stockpile.

Government regulations.-On January 1, 1951 the National Production Authority, in order to insure adequate supplies of cadmium for military uses and essential civilian products for which there is no satisfactory substitute, imposed inventory controls on cadmium and limited the purposes for which cadmium, cadmium-containing items, and cadmium-plated items could be produced. The cadmium conservation order, M-19, was amended on March 16, April 26, and July 30, to relax restrictions on the use of cadmium and permit its increased use in a wide range of military and civilian products. This was done because inventories of the metal had been accumulating in the hands of producers, pending the placement of a larger volume of defense orders.

Production.-The domestic output of primary metallic cadmium and the production of cadmium contained in primary compounds decreased 8 percent and 42 percent, respectively, in 1951. Recovery of cadmium in secondary metal and compounds declined 61 percent. Output of cadmium oxide (cadmium content) increased 5 percent during the year, while the cadmium content of cadmium sulfide, cadmium lithopone, and cadmium sulfoselenide produced decreased 39 percent. Data for the production of other cadmium compounds are unavailable for 1951.

Consumption.-The apparent consumption of primary cadmium in all forms totaled 7,172,588 pounds in 1951, as computed by deducting net exports of metal from production and adjusting for producers', distributors' and compound manufacturers' stock changes. This quantity was 25 percent less than in 1950. In 1951, as in the previous 3 years, cadmium metal was purchased by the Federal Government for the National Stockpile.

Prepared July 21, 1952 by Robert L. Mentch, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Stocks.-Total domestic stocks of cadmium metal and compounds, excluding consumers' stocks, for which data are not available, increased 76 percent in 1951 largely as a result of the cadmium conservation order. Details are given in the following table.

Foreign trade.-Total imports for consumption of metallic cadmium and cadmium contained in flue dust decreased 24 percent in weight and 14 percent in value in 1951. The total value of exports, principally metal, increased 175 percent over 1950.

Imports of cadmium-bearing flue dust, all obtained from Mexico, were slightly larger than in 1950. Imports of metallic cadmium, however, declined more than 85 percent from the 1950 level. Of the 90,065 pounds imported, Belgium-Luxembourg supplied 59 percent, 20 percent came from Japan, 11 percent from Australia, 6 percent from the Netherlands, 4 percent from Canada, and a small quantity from Sweden.

Exports of cadmium metal from the United States totaled 606,233 pounds in 1951, 72 percent higher than in 1950. Shipments to European Recovery Program "participating countries" accounted for approximately 98 percent of the total. Of the quantity exported, the United Kingdom received 49 percent, France 42 percent, Germany 4 percent, Sweden 2 percent, and 12 other countries the remaining 3 percent. Exports of cadmium alloys decreased from 9,106 pounds in 1950 to 5,639 pounds in 1951. Canada received 89 percent of the total and Chile and Germany the remainder.

World production.-World production of cadmium totaled 12,504,000 pounds in 1950, an increase of 9 percent over the previous year. Production in 1951 is estimated at about 12,000,000 pounds. As in the past the bulk of the output was produced in the United States.

Table 1. - Cadmium produced and shipped in the United States, 1942-46 (average) and 1947-51, in pounds of contained cadmium

	1942-46 (average)	1947	1948	1949	1950 1/	1951
Production:						
Primary:						
Metallic cadmium-	7,661,217	8,007,287	7,582,961	8,023,616	8,849,690	8,114,238
Cadmium compounds 2/-------	233,304	500,859	192,696	203,001	340,704	197,099
Total primary production--.	7,894,521	8,508,146	7,775,657	8,226,617	9,190,394	8,311,337
Secondary (metal & compounds) 2/3/-	202,639	104,764	121,159	384,398	427,052	167,957
Shipments by producers:						
Primary:						
Metallic cadmium-	7,646,031	7,852,907	7,639,113	7,867,486	8,851,835	7,767,055
Cadmium compounds 2/--------	244,610	500,859	192,696	203,001	340,704	197,099
Total primary shipments---	7,890,641	8,353,766	7,831,809	8,070,487	9,192,539	7,964,154
Secondary (metal & compounds) 2/3/ --	205,618	134,793	121,159	384,398	427,052	87,633
Value of primary shipments:						
Metallic cadmium-	$6,189,463	$12,358,526	$12,679,571	$14,813,382	$17,925,482	$19,397,411
Cadmium compounds 4/-------------	199,807	788,352	319,875	381,642	689,926	492,215
Total value---	6,389,270	13,146,878	12,999,446	15,195,024	18,615,408	19,889,626

1/ Revised figures. 2/ Excludes compounds made from metal. 3/ Bureau of Mines not at liberty to publish figures separately for secondary cadmium compounds. 4/ Value of metal contained in compounds made directly from flue dust or other cadmium raw materials (except metal).

Table 2. - Cadmium oxide and cadmium sulfide produced in the United States, 1947-51, in pounds

Year	Oxide		Sulfide 1/	
	Gross weight	Cd content	Gross weight	Cd content
1947----------	449,847	392,556	3,501,508	1,308,385
1948----------	334,859	291,847	3,137,035	1,096,770
1949----------	570,993	497,876	2,631,888	999,386
1950----------	579,538	505,336	4,383,943	1,570,522
1951----------	606,369	528,645	3,118,413	955,742

1/ Includes cadmium lithopone and cadmium sulfoselenide.

Table 3. - Cadmium stocks at end of year, 1950-51, in pounds of contained cadmium 1/

	1950 2/			1951		
	Metallic cadmium	Cadmium compounds	Total cadmium	Metallic cadmium	Cadmium compounds	Total cadmium
Metal producers (primary).	512,429		512,429	859,630		859,630
Compound manufacturers....	15,427	187,206	202,633	58,111	244,987	303,098
Distributors 3/............	47,897	61,170	109,067	205,415	78,657	284,072
Total stocks 4/.....	575,753	248,376	824,129	1,123,156	323,644	1,446,800

1/ Excludes cadmium in National Stockpile.
2/ Revised figures.
3/ Comprises principally 8 largest dealers and producers of plating salts.
4/ Excludes consumers' stocks, which were about 1,000,000 pounds at the end of 1944 (latest date for which figures were compiled).

Table 4. - Cadmium metal and flue dust imported for consumption in the United States, 1949-51, by countries

(U. S. Department of Commerce)

Country	1949		1950		1951	
	Pounds	Value	Pounds	Value	Pounds	Value
Metallic cadmium						
Australia------------	7,210	$7,919	7,918	$21,528	9,627	$30,962
Belgium-Luxembourg---	48,503	101,560	143,825	518,552	52,870	209,246
Canada---------------	68,140	139,392	237,494	472,322	3,336	11,684
Egypt----------------	---	---	1,240	2,292	---	---
Italy----------------	---	---	4,400	10,120	---	---
Japan----------------	31,640	50,742	194,745	368,084	18,808	70,813
Netherlands----------	---	---	34,205	95,031	5,402	21,466
New Zealand----------	---	---	2,264	6,722	---	---
Peru-----------------	1,711	3,422	3,010	6,624	---	---
Sweden---------------	---	---	---	---	22	111
United Kingdom-------	---	---	1,008	2,621	---	---
Total metallic cadmium--------	157,204	303,035	630,109	1,503,896	90,065	344,282
Flue dust (Cd content)						
Brazil---------------	2,906	2,801	---	---	---	---
Mexico---------------	1,786,761	1,593,142	1,601,640	1,519,104	1,606,775	2,261,390
Total flue dust-	1,789,667	1,595,943	1,601,640	1,519,104	1,606,775	2,261,390
Grand total-----	1,946,871	1,898,978	2,231,749	3,023,000	1,696,840	2,605,672

Table 5. - Cadmium exported from the United States, 1949-51, by kinds, in gross weight

(U. S. Department of Commerce)

Kind	1949		1950		1951	
	Pounds	Value	Pounds	Value	Pounds	Value
Dross, flue dust, residues, and scrap	500	$125	---	---	200,579	$10,029
Metal	566,135	1,264,307	352,927	$794,540	606,233	2,198,311
Alloys	3,000	6,150	9,106	11,575	5,639	9,311
Total	---	1,270,582	---	806,115	---	2,217,651

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary   J. J. FORBES, Director

FOR IMMEDIATE RELEASE   MINERAL MARKET REPORT NO. MMS 2089

RECORD CONSUMPTION OF INDUSTRIAL EXPLOSIVES IN 1951

Consumption of 753,820,583 pounds of industrial explosives in the United States during 1951 was 5 percent greater than in 1950 and was the highest annual total, according to the Bureau of Mines, United States Department of the Interior. The second largest consumption-year was in 1948 when 725,227,173 pounds were used.

Sales of all high explosives other than permissibles and liquid oxygen increased in 1951 over 1950, whereas consumption of permissible explosives and black blasting powder declined from the previous year's consumption. Sales of high explosives other than permissibles reached a new record annual total. Consumption of high explosives other than permissibles increased 6 percent over 1950 due to increased consumption by all uses except coal mining and "all other purposes." In metal mining the increased consumption in 1951 was 15 percent, quarrying and nonmetal mining and railway and other construction work both used 8 percent more high explosives other than permissibles than in 1950. Sales of permissible explosives, of which 99 percent of the quantity consumed was used in coal mining, declined 1 percent in 1951 when compared with 1950. Use of liquid oxygen explosives in coal mining increased 47 percent over 1950 and consumption increased 17 percent in quarrying and nonmetal mining.

Thirty-nine percent of the industrial explosives consumed in 1951 was used for mining coal. In 1950 coal mines used 41 percent of the industrial explosives sold. Bituminous-coal mines used 31 percent and anthracite mines 8 percent of all types of industrial explosives. Coal mines used 291,786,782 pounds of all types of explosives in 1951 of which 152,500,237 pounds, or 52 percent, were high explosives other than permissibles; 107,182,402 pounds, or 37 percent, were of permissible type; 11,835,825 pounds, or 4 percent, were black blasting powder; and 20,268,318 pounds, or 7 percent were liquid oxygen explosives.

Metal mines in 1951 used 15 percent more explosives than in 1950. Among States using large quantities of explosives for metal mining the greatest percent of increase was in the large copper-producing State of Nevada, followed by Colorado, Kansas and Oklahoma heavy producers of lead-zinc ores. Other metal-producing States showing large increases were Utah, Minnesota, New York and Tennessee. Metal mines in 1951 consumed 147,212,729 pounds of industrial explosives, or 20 percent of all explosives used in 1951. Practically all explosives used in metal mines were high explosives other than permissibles.

Prepared by V. E. Wrenn and H. J. Byroad under the supervision of Seth T. Reese, Chief, Accident Analysis Branch, Health and Safety Division.

Table 1. - Salient statistics of industrial explosives in the United States, 1935-39 average, 1950, and 1951

Kind of explosive		1935-39 average	1950	1951
Apparent consumption of:				
Black blasting powder:				
Granular	25-lb. kegs	1,250,831	217,636	150,093
	pounds	31,270,775	5,440,900	3,752,325
Pellet	25-lb. cases	1,363,237	608,561	409,313
	pounds	34,080,925	15,214,025	10,232,825
Total	25-lb. units	2,614,068	826,197	559,406
	pounds	65,351,700	20,654,925	13,985,150
High explosives:				
Permissible	pounds	45,683,634	109,419,756	108,257,952
Other than permissible	pounds	253,624,298	575,962,243	611,236,434
Total	pounds	299,307,932	685,381,999	719,494,386
Liquid oxygen explosive	pounds	1/	13,804,401	20,341,047
Grand total . .	pounds	364,659,632	719,841,325	753,820,583

1/ Data not collected prior to 1947.

A total of 152,353,497 pounds of explosives were used in quarries and nonmetal mines in 1951, an increase of 8 percent over the amount consumed in 1950. The large quarry and nonmetal mining States of West Virginia, Indiana, New Mexico, Michigan, Ohio and North Carolina all showed increased use of explosives over 1950. Among the States that reported decreased use of explosives in 1951 were Oklahoma, Iowa and Tennessee.

Quarries and nonmetal mines consumed 20 percent of all explosives used in the United States during 1951. Most of the explosives was of the high explosives other than permissible type, but some black blasting powder and permissibles were also used.

Railway and other construction work in 1951 required over 7 percent more explosives than in 1950. This use consumed a total of 150,511,100 pounds, or 20 percent of all industrial explosives manufactured and sold in 1951. Of the larger consuming States, the greatest increases in 1951 over 1950 were reported in New Mexico, New York, Oregon, Tennessee, Pennsylvania, Colorado and Texas. Among the large consumers, Washington and California showed a sharp decline from the 1950 consumption.

The large coal-producing States in 1951 were the largest consumers of industrial explosives. The States consuming the largest quantities of industrial explosives were Pennsylvania, West Virginia, Kentucky, Ohio and Illinois. These five States used 39 percent of all industrial explosives consumed in the United States during 1951.

Table 2. - Industrial explosives sold for consumption in the United States in 1950-1951, by uses.

Kind of explosive	Coal mining		Metal mining		Quarrying and nonmetal mining		Railway and other construction work		All other purposes	
	1950	1951	1950	1951	1950	1951	1950	1951	1950	1951
Apparent consumption of --										
Black blasting powder:										
Granular.. 25-lb. kegs	117,380	81,438	1/ 2,160	264	42,276	36,025	35,342	21,266	24,798	11,100
pounds	2,934,500	2,035,950	1/54,000	6,600	1,056,900	900,625	883,550	531,650	619,950	277,500
Pellet.... 25-lb. cases	590,690	391,995	2	84	15,109	13,389	509	910	2,251	2,935
pounds	14,767,250	9,799,875	50	2,100	377,725	334,725	12,725	22,750	56,275	73,375
Total... 25-lb. units	708,070	473,433	1/ 2,158	348	57,385	49,414	35,851	22,176	27,049	14,035
pounds	17,701,750	11,835,825	1/53,950	8,700	1,434,625	1,235,350	896,275	554,400	676,225	350,875
High explosives:										
Permissible.... pounds	108,350,593	107,182,402	54,725	131,250	895,188	815,025	73,750	105,775	45,500	23,500
Other than permissibles.... pounds	156,838,705	152,500,237	127,748,904	147,072,779	138,857,414	150,230,393	138,885,722	149,850,925	13,631,498	11,582,100
Total........ pounds	265,189,298	259,682,639	127,803,629	147,204,029	139,752,602	151,045,418	138,959,472	149,956,700	13,676,998	11,605,600
Liquid oxygen explosives..... pounds	13,742,238	20,268,318	-----	-----	62,163	72,729	-----	-----	-----	-----
Grand total. pounds	296,633,286	291,786,782	127,749,679	147,212,729	141,249,390	152,353,497	139,855,747	150,511,100	14,353,223	11,956,475

1/ Sold by manufacturer but later returned unused.

Table 3. -- Total consumption of all industrial explosives in 1951
by State of consumption and use. (Pounds)

State of consumption	Coal mining	Metal mining	Quarrying and non-metal mining	Railway and other construction work	All other purposes	Total
Alabama	10,027,952	6,166,742	2,602,343	1,609,023	615,925	21,021,985
Alaska	270,300	59,950	----	1,828,050	3,750	2,162,050
Arizona	8,000	24,813,550	158,575	2,480,000	----	27,460,125
Arkansas	1,867,200	1,816,625	1,769,154	1,101,235	83,825	6,638,039
California	----	3,783,164	5,161,157	9,112,632	63,518	18,120,471
Colorado	1,043,830	6,649,770	1,089,739	6,571,938	119,890	15,475,167
Connecticut	----	----	593,964	612,915	58,720	1,265,599
Delaware	----	----	28,000	43,450	11,400	82,850
Florida	----	303,842	2,988,925	3,593,275	246,750	7,132,792
Georgia	25,100	----	2,388,716	1,886,695	855,973	5,156,484
Idaho	100	3,683,567	169,978	3,608,123	36,850	7,498,618
Illinois	19,294,632	646,050	9,987,473	543,464	212,486	30,684,105
Indiana	24,114,351	----	4,772,790	600,143	189,480	29,676,764
Iowa	1,284,209	----	5,726,163	1,951,812	798,275	9,760,459
Kansas	2,078,610	1,721,500	4,189,987	1,639,005	15,125	9,644,227
Kentucky	30,011,163	49,850	4,881,635	4,698,364	280,925	39,921,937
Louisiana	----	----	664,700	4,402,792	1,040,000	6,107,492
Maine	----	----	208,738	857,850	102,975	1,169,563
Maryland and D. C.	482,525	----	1,491,060	372,930	130,012	2,476,527
Massachusetts . . .	----	----	939,254	1,401,039	24,663	2,364,956
Michigan	7,625	11,882,300	7,687,612	210,456	312,300	20,100,293
Minnesota	----	28,909,427	926,355	196,655	334,250	30,366,687
Mississippi	----	----	62,550	2,547,650	658,800	3,269,000
Missouri	5,068,685	4,004,225	7,898,768	1,359,475	61,425	18,392,578
Montana	725,520	4,209,825	1,190,081	1,480,815	136,561	7,742,802
Nebraska	----	----	280,870	301,815	54,150	636,835
Nevada	----	6,434,465	814,350	72,950	1,010	7,322,775
New Hampshire . . .	----	----	48,533	252,750	33,925	335,208
New Jersey	----	2,006,650	1,304,801	557,600	15,100	3,884,151
New Mexico	79,250	5,445,089	5,945,450	9,969,457	124,046	21,563,292
New York	----	6,418,333	8,440,187	5,040,380	201,430	20,100,330
North Carolina . .	6,125	302,000	4,281,543	3,380,875	914,700	8,885,243
North Dakota . . .	476,100	----	----	876,600	45,225	1,397,925
Ohio	22,852,863	----	14,021,686	1,293,575	370,131	38,538,255
Oklahoma	2,658,972	2,901,240	2,892,966	4,994,815	15,525	13,463,518
Oregon	300	27,500	549,734	11,805,803	902,350	13,285,687
Pennsylvania:						
Anthracite . . .	62,172,651	832,600	21,060,810	7,188,447	317,511	127,951,479
Bituminous . . .	36,379,460					
Rhode Island . . .	----	----	44,190	130,950	----	175,140
South Carolina . .	----	----	1,395,688	415,350	265,250	2,076,288
South Dakota . . .	2,500	1,278,200	486,650	458,505	7,025	2,232,880
Tennessee	3,490,000	1,993,625	4,011,704	5,009,101	95,400	14,599,830
Texas	13,675	159,815	4,935,014	22,867,053	38,250	28,013,807
Utah	1,753,125	15,206,780	563,141	1,567,048	60,856	19,150,950
Vermont	----	572,150	442,800	161,050	37,175	1,213,175
Virginia	10,733,349	182,700	3,947,639	2,071,461	363,125	17,298,274
Washington	406,550	2,531,095	1,369,311	10,903,396	749,261	15,959,613
West Virginia . . .	52,846,115	----	3,107,649	3,548,047	499,175	60,000,986
Wisconsin	----	1,894,100	3,938,833	639,842	380,373	6,853,148
Wyoming	1,605,945	326,000	892,231	2,294,444	71,604	5,190,224
Total 1951 . .	291,786,782	147,212,729	152,353,497	150,511,100	11,956,475	753,820,583
Total 1950 . .	296,633,286	127,749,679	141,249,390	139,855,747	14,353,223	719,841,325

Table 4. - Industrial explosives sold for consumption in the United States in 1951, by State of consumption

State	Black Blasting Powder				High Explosives		Liquid Oxygen Explosives (Pounds)
	Granular	Pellet	Total		Other than permissible (Pounds)	Permissible (Pounds)	
	(25-lb. kegs)	(25-lb. cases)	(25-lb. units)	(Pounds)			
Alabama	6,238	24,972	31,210	780,250	14,704,225	5,537,510	-----
Alaska	10	---	10	250	1,916,600	245,200	-----
Arizona	78	120	198	4,950	27,443,175	12,000	-----
Arkansas	3,274	1,412	4,686	117,150	6,405,239	115,650	-----
California	12,999	---	12,999	324,975	17,795,246	250	-----
Colorado	342	960	1,302	32,550	14,652,617	790,000	-----
Connecticut	110	---	110	2,750	1,262,849	-----	-----
Delaware	---	---	---	-----	82,850	-----	-----
Florida	16,318	---	16,318	407,950	6,724,842	-----	-----
Georgia	1,343	984	2,327	58,175	5,098,209	100	-----
Idaho	818	---	818	20,450	7,476,068	2,100	-----
Illinois	10,107	71,086	81,193	2,029,825	19,799,673	2,838,900	1/ 20,341,047
Indiana	5,807	29,272	35,079	876,975	21,643,769	725,750	2/
Iowa	2,244	15,160	17,404	435,100	9,301,779	23,580	-----
Kansas	545	2,706	3,251	81,275	9,486,002	76,950	-----
Kentucky	10,638	63,642	74,280	1,857,000	24,068,187	13,996,750	-----
Louisiana	670	---	670	16,750	6,090,242	500	-----
Maine	399	25	424	10,600	1,158,963	-----	-----
Maryland and D. C.	766	2,044	2,810	70,250	2,253,252	153,025	-----
Massachusetts	176	94	270	6,750	2,358,206	-----	-----
Michigan	60	96	156	3,900	20,096,193	200	-----
Minnesota	952	---	952	23,800	30,342,887	-----	-----
Mississippi	22	---	22	550	3,268,450	-----	-----
Missouri	14,753	6,684	21,437	535,925	17,832,753	23,900	-----
Montana	44	1,864	1,908	47,700	7,534,332	160,770	-----
Nebraska	318	---	318	7,950	628,885	-----	-----
Nevada	120	---	120	3,000	7,319,775	-----	-----
New Hampshire	67	---	67	1,675	333,533	-----	-----
New Jersey	26	---	26	650	3,883,501	-----	-----
New Mexico	12	1,308	1,320	33,000	21,483,442	46,850	-----
New York	466	112	578	14,450	20,079,880	6,000	-----
North Carolina	3,776	---	3,776	94,400	8,782,893	7,950	-----
North Dakota	1,150	4,420	5,570	139,250	1,136,475	122,200	-----
Ohio	13,407	22,123	35,530	888,250	27,916,885	1,838,050	2/
Oklahoma	2,666	3,242	5,908	147,700	13,128,568	187,250	-----
Oregon	148	---	148	3,700	13,281,687	300	-----
Pennsylvania	11,913	56,285	68,198	1,704,950	91,085,682	35,160,847	-----
Rhode Island	20	---	20	500	174,640	-----	-----
South Carolina	1,117	---	1,117	27,925	2,048,363	-----	-----
South Dakota	2	---	2	50	2,232,830	-----	-----
Tennessee	5,202	60,182	65,384	1,634,600	12,101,255	863,975	-----
Texas	2,430	---	2,430	60,750	27,634,507	318,550	-----
Utah	178	84	262	6,550	17,416,125	1,728,275	-----
Vermont	2,831	512	3,343	83,575	1,129,600	-----	-----
Virginia	10,744	30,876	41,620	1,040,500	9,436,649	6,821,125	-----
Washington	362	---	362	9,050	15,589,113	361,450	-----
West Virginia	3,124	6,220	9,344	233,600	24,542,741	35,224,645	-----
Wisconsin	1,252	96	1,348	33,700	6,819,448	-----	-----
Wyoming	49	2,732	2,781	69,525	4,253,349	867,350	-----
Total	150,093	409,313	559,406	13,985,150	611,236,434	108,257,952	20,341,047

1/ Includes Indiana and Ohio.

2/ Included in Illinois.

Table 5. - Industrial explosives sold in 1951, by type, use, and State of consumption.
Granular Black Blasting Powder (25-lb. kegs).

State of consumption	Use					
	Coal mining	Metal mining	Quarrying and nonmetal mining	Railway and other construction work	All other purposes	Total
Alabama	1,361	---	1,535	3,180	162	6,238
Alaska	---	---	---	---	10	10
Arizona	---	58	---	20	---	78
Arkansas	3,125	9	10	119	11	3,274
California	---	156	414	11,915	514	12,999
Colorado	---	---	31	310	1	342
Connecticut	---	---	92	---	18	110
Florida	---	---	16,315	1	2	16,318
Georgia	20	---	684	592	47	1,343
Idaho	---	---	816	---	2	818
Illinois	9,654	14	130	7	302	10,107
Indiana	4,292	---	1,313	---	202	5,807
Iowa	2,113	---	101	---	30	2,244
Kansas	132	---	168	210	35	545
Kentucky	10,184	---	245	---	209	10,638
Louisiana	---	---	---	8	662	670
Maine	---	---	112	156	131	399
Maryland and D. C.	106	---	631	1	28	766
Massachusetts	---	---	89	71	16	176
Michigan	33	---	---	2	25	60
Minnesota	---	---	921	3	28	952
Mississippi	---	---	---	8	14	22
Missouri	11,868	1	1,736	126	1,022	14,753
Montana	10	---	---	27	7	44
Nebraska	---	---	257	15	46	318
Nevada	---	---	120	---	---	120
New Hampshire	---	---	---	---	67	67
New Jersey	---	---	---	---	26	26
New Mexico	12	---	---	---	---	12
New York	---	---	314	28	124	466
North Carolina	85	---	80	847	2,764	3,776
North Dakota	1,210	---	---	1/60	---	1,150
Ohio	13,289	---	18	---	100	13,407
Oklahoma	1,582	---	375	701	8	2,666
Oregon	---	---	---	148	---	148
Pennsylvania:						
Anthracite	81	---	2,230	626	231	11,913
Bituminous	8,745					
Rhode Island	---	---	20	---	---	20
South Carolina	---	---	815	191	111	1,117
South Dakota	---	---	---	---	2	2
Tennessee	4,167	---	53	952	30	5,202
Texas	15	---	1,124	163	1,128	2,430
Utah	6	---	157	15	---	178
Vermont	---	---	2,830	---	1	2,831
Virginia	6,230	---	1,045	644	2,825	10,744
Washington	32	16	108	206	---	362
West Virginia	3,046	---	35	32	11	3,124
Wisconsin	---	10	1,093	2	147	1,252
Wyoming	40	---	8	---	1	49
Total (kegs)	81,438	264	36,025	21,266	11,100	150,093
(pounds)	2,035,950	6,600	900,625	531,650	277,500	3,752,325

1/ Sold by manufacturer but later returned unused.

Table 6. - Industrial explosives sold in 1951, by type, use, and State of consumption.
Pellet Black Blasting Powder (25-lb. cases).

State of consumption	Use					
	Coal mining	Metal mining	Quarrying and nonmetal mining	Railway and other construction work	All other purposes	Total
Alabama	24,962	---	---	---	10	24,972
Arizona	---	---	---	120	---	120
Arkansas	1,382	---	---	30	---	1,412
Colorado	960	---	---	---	---	960
Georgia	904	---	---	80	---	984
Illinois	69,812	---	1,075	2	197	71,086
Indiana	28,346	---	272	---	654	29,272
Iowa	13,088	---	2,072	---	---	15,160
Kansas	2,608	---	---	98	---	2,706
Kentucky	60,244	---	2,652	---	746	63,642
Maine	---	---	25	---	---	25
Maryland and D. C.	2,008	---	33	3	---	2,044
Massachusetts . . .	---	---	7	73	14	94
Michigan	96	---	---	---	---	96
Missouri	6,375	---	219	90	---	6,684
Montana	1,864	---	---	---	---	1,864
New Mexico	1,308	---	---	---	---	1,308
New York	---	---	24	36	52	112
North Dakota . . .	4,420	---	---	---	---	4,420
Ohio	16,247	---	5,100	---	776	22,123
Oklahoma	3,014	---	20	204	4	3,242
Pennsylvania:						
Anthracite . . .	27,734	---	702	2	382	56,285
Bituminous . . .	27,465					
Tennessee	59,954	84	32	112	---	60,182
Utah	40	---	44	---	---	84
Vermont	---	---	512	---	---	512
Virginia	30,232	---	504	40	100	30,876
West Virginia . . .	6,200	---	---	20	---	6,220
Wisconsin	---	---	96	---	---	96
Wyoming	2,732	---	---	---	---	2,732
Total (cases)	391,995	84	13,389	910	2,935	409,313
(pounds)	9,799,875	2,100	334,725	22,750	73,375	10,232,825

Table 7. - Industrial explosives sold in 1951, by type, use, and State of consumption.
Liquid Oxygen Explosives (pounds)

Illinois	20,268,318	---	---	---	---	20,341,047
Indiana		---	---	---	---	
Ohio		---	72,729	---	---	
Total	20,268,318	---	72,729	---	---	20,341,047

Table 8. - Industrial explosives sold in 1951, by type, use, and State of consumption.
High Explosives Other Than Permissibles (Pounds)

State of consumption	Use					
	Coal mining	Metal mining	Quarrying and nonmetal mining	Railway and other construction work	All other purposes	Total
Alabama	3,849,517	6,166,742	2,546,818	1,529,523	611,625	14,704,225
Alaska	45,000	59,950	-----	1,808,150	3,500	1,916,600
Arizona	-----	24,812,100	158,575	2,472,500	-----	27,443,175
Arkansas	1,638,875	1,816,400	1,768,904	1,097,510	83,550	6,405,239
California	-----	3,779,264	5,150,557	8,814,757	50,668	17,795,246
Colorado	332,380	6,569,520	1,087,264	6,544,188	119,265	14,652,617
Connecticut	-----	-----	591,664	612,915	58,270	1,262,849
Delaware	-----	-----	28,000	43,450	11,400	82,850
Florida	-----	303,842	2,581,050	3,593,250	246,700	6,724,842
Georgia	1,900	-----	2,371,616	1,869,895	854,798	5,098,209
Idaho	-----	3,683,567	149,578	3,606,123	36,800	7,476,068
Illinois	8,517,875	645,700	9,889,198	543,239	203,661	19,799,673
Indiana	16,148,431	-----	4,727,115	600,143	168,080	21,643,769
Iowa	889,104	-----	5,666,838	1,948,312	797,525	9,301,779
Kansas	1,998,260	1,721,500	4,120,687	1,631,305	14,250	9,486,002
Kentucky	14,422,613	49,850	4,649,160	4,697,014	249,550	24,068,187
Louisiana	-----	-----	664,700	4,402,592	1,022,950	6,090,242
Maine	-----	-----	205,313	853,950	99,700	1,158,963
Maryland and D. C.	283,100	-----	1,468,010	372,830	129,312	2,253,252
Massachusetts . . .	-----	-----	936,854	1,397,439	23,913	2,358,206
Michigan	4,200	11,882,300	7,687,612	210,406	311,675	20,096,193
Minnesota	-----	28,909,427	903,330	196,580	333,550	30,342,887
Mississippi	-----	-----	62,550	2,547,450	658,450	3,268,450
Missouri	4,599,910	4,003,950	7,838,943	1,354,075	35,875	17,832,753
Montana	560,500	4,167,225	1,190,081	1,480,140	136,386	7,534,332
Nebraska	-----	-----	274,445	301,440	53,000	628,885
Nevada	-----	6,434,465	811,350	72,950	1,010	7,319,775
New Hampshire . . .	-----	-----	48,533	252,750	32,250	333,533
New Jersey	-----	2,006,650	1,304,801	557,600	14,450	3,883,501
New Mexico	350	5,445,089	5,945,450	9,968,507	124,046	21,483,442
New York	-----	6,418,333	8,427,737	5,037,780	196,030	20,079,880
North Carolina . .	350	302,000	4,275,243	3,359,700	845,600	8,782,893
North Dakota . . .	213,150	-----	-----	878,100	45,225	1,136,475
Ohio	12,465,172	-----	13,809,907	1,293,575	348,231	27,916,885
Oklahoma	2,356,822	2,901,240	2,883,091	4,972,190	15,225	13,128,568
Oregon	-----	27,500	549,734	11,802,103	902,350	13,281,687
Pennsylvania:						
Anthracite . . .	45,916,421	832,600	20,962,785	7,167,172	295,136	91,085,682
Bituminous . . .	15,911,568					
Rhode Island . . .	-----	-----	43,690	130,950	-----	174,640
South Carolina . .	-----	-----	1,375,313	410,575	262,475	2,048,363
South Dakota . . .	2,500	1,278,200	486,650	458,505	6,975	2,232,830
Tennessee	1,034,250	1,991,425	3,998,679	4,982,251	94,650	12,101,255
Texas	13,300	159,815	4,588,364	22,862,978	10,050	27,634,507
Utah	37,750	15,198,730	552,116	1,566,673	60,856	17,416,125
Vermont	-----	572,150	359,250	161,050	37,150	1,129,600
Virginia	3,003,324	182,700	3,908,914	2,051,711	290,000	9,436,649
Washington	59,250	2,530,695	1,366,611	10,893,796	738,761	15,589,113
West Virginia . . .	17,497,070	-----	3,012,174	3,534,597	498,900	24,542,741
Wisconsin	-----	1,893,850	3,909,108	639,792	376,698	6,819,448
Wyoming	697,295	326,000	892,031	2,266,444	71,579	4,253,349
Total	152,500,237	147,072,779	150,230,393	149,850,925	11,582,100	611,236,434

Table 9. - Industrial explosives sold in 1951, by type, use, and State of consumption.
Permissible Explosives (Pounds)

State of consumption	Use					
	Coal mining	Metal mining	Quarrying and nonmetal mining	Railway and other construction work	All other purposes	Total
Alabama	5,520,360	---	17,150	---	---	5,537,510
Alaska	225,300	---	---	19,900	---	245,200
Arizona	8,000	---	---	4,000	---	12,000
Arkansas	115,650	---	---	---	---	115,650
California	-----	---	250	---	---	250
Colorado	687,450	80,250	1,700	20,000	600	790,000
Georgia	100	---	---	---	---	100
Idaho	100	---	---	2,000	---	2,100
Illinois	2,774,400	---	68,150	---	1/3,650	2,838,900
Indiana	719,700	---	6,050	---	---	725,750
Iowa	15,080	---	5,000	3,500	---	23,580
Kansas	11,850	---	65,100	---	---	76,950
Kentucky	13,827,850	---	160,050	1,350	7,500	13,996,750
Louisiana	-----	---	---	---	500	500
Maryland and D. C.	146,575	---	6,450	---	---	153,025
Michigan	200	---	---	---	---	200
Missouri	12,700	250	10,950	---	---	23,900
Montana	118,170	42,600	---	---	---	160,770
New Mexico	45,900	---	---	950	---	46,850
New York	-----	---	4,000	1,000	1,000	6,000
North Carolina . .	3,650	---	4,300	---	---	7,950
North Dakota . . .	122,200	---	---	---	---	122,200
Ohio	1,826,950	---	11,100	---	---	1,838,050
Oklahoma	187,250	---	---	---	---	187,250
Oregon	300	---	---	---	---	300
Pennsylvania:						
Anthracite . . .	15,560,855	---	24,725	5,575	7,050	35,160,847
Bituminous . . .	19,562,642					
Tennessee	852,725	100	10,900	250	---	863,975
Texas	-----	---	318,550	---	---	318,550
Utah	1,714,225	8,050	6,000	---	---	1,728,275
Virginia	6,818,475	---	---	2,650	---	6,821,125
Washington	346,500	---	---	4,450	10,500	361,450
West Virginia . . .	35,117,895	---	94,600	12,150	---	35,224,645
Wyoming	839,350	---	---	28,000	---	867,350
Total	107,182,402	131,250	815,025	105,775	23,500	108,257,952

1/ Sold by manufacturer but later returned unused.

Table 10. -- Estimated quantities of ingredients contained in explosives consumed in the United States during 1951 in pounds (Excludes data on liquid oxygen explosives).

	1951					1950 Total
	Black Blasting Powder		Permissibles	Other high explosives	Total	
	Granular	Pellet				
Sulphur	488,000	1,300,000	---	12,958,000	14,746,000	14,850,000
Charcoal	563,000	1,494,000	---	---	2,057,000	3,037,000
Sodium nitrate	2,702,000	7,184,000	6,495,000	244,250,000	260,631,000	251,317,000
Explosives oil 1/ . . .	---	----	10,393,000	178,114,000	188,507,000	178,340,000
Nitrotoluenes	---	----	---	3,912,000	3,912,000	3,686,000
Nitrocellulose	---	----	---	2,139,000	2,139,000	2,016,000
Ammonium nitrate . . .	---	----	70,909,000	68,458,000	139,367,000	136,178,000
Antacid	---	----	10,826,000	5,501,000	16,327,000	5,731,000
Carbonaceous combustible material	---	----	541,000	61,430,000	61,971,000	68,826,000
Wrapper						
Paper	---	153,000	4,547,000	19,071,000	23,771,000	22,794,000
Paraffin	---	102,000	4,547,000	15,403,000	20,052,000	19,262,000
Total	3,753,000	10,233,000	108,258,000	611,236,000	733,480,000	706,037,000

1/ Contains nitroglycerin (approximately 132,000,000 pounds) and any of the following low-freezing ingredients: nitropolyglycerin, nitrosugar, ethlene glycol dinitrate, etc.

Table 11. -- Estimated quantities of nitrogen contained in explosives consumed in the United States during 1951. (Excludes data on liquid oxygen explosives).

Nitrogen material	Pounds	Nitrogen content of material	
		Percent	Pounds
Explosives oil 1/.	188,507,000	18.5	34,874,000
Nitrotoluenes	3,912,000	15.4	602,000
Nitrocellulose	2,139,000	12.0	257,000
Sodium nitrate	260,631,000	16.5	43,004,000
Ammonium nitrate	139,367,000	35.0	48,778,000
Total	594,556,000	--	127,515,000

1/ Contains nitroglycerin (approximately 132,000,000 pounds) and any of the following low-freezing ingredients: nitropolyglycerin, nitrosugar, ethylene glycol dinitrate, etc.

Table 12. -- Percentage of distribution of the types of industrial explosives in 1951, by consuming industry

Kind of explosive	Coal mining			Metal mining	Quarrying and nonmetal mining	Railway and other construction work	All other purposes	Total
	Anthracite	Bituminous	Total					
Black blasting powder . . .	5.0	79.6	84.6	0.1	8.8	4.0	2.5	100.0
High explosives other than permissibles	7.5	17.4	24.9	24.1	24.6	24.5	1.9	100.0
Permissible explosives . .	14.4	84.6	99.0	.1	.8	.1	1/	100.0
Liquid oxygen explosives .	--	99.6	99.6	--	.4	--	---	100.0
Total	8.2	30.5	38.7	19.5	20.2	20.0	1.6	100.0

1/ Less than 0.1 percent.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Oscar L. Chapman, Secretary
J. J. FORBES, Director

FOR RELEASE AUGUST 12, 1952
MINERAL MARKET REPORT, NO. MMS 2090

LARGE GAIN IN SALES OF LP-GASES REPEATS IN 1951

By A. T. Coumbe 1/ and I. F. Avery 1/

A sharp upward trend in sales of LP-gases, evident in 1950, continued into 1951, when deliveries to consumers were 21 percent over the 1950 total, which in turn was 23 percent above 1949 requirements, according to a survey made by the Petroleum and Natural Gas Branch, Fuels and Explosives Division, Bureau of Mines, United States Department of the Interior. The market for this liquid fuel has practically doubled in 4 years, as its advantages for both domestic and industrial uses, as well as for fueling internal-combustion engines, have become more widely known. Furthermore its fast growing use as raw material by both synthetic rubber and chemical manufacturing plants has also helped to rapidly expand the demand. Exports of LP-gases have likewise mounted sharply in recent years, with increases of 17 percent in 1949, 27 percent in 1950, and 29 percent in 1951, according to records compiled by the Bureau of the Census, United States Department of Commerce.

A survey of sales of LP-gases by States, first attempted for the year 1950, was repeated for 1951, so that a more detailed review of State markets on a comparative basis, is now available. Some of the schedules received for 1951 indicated that a few of the 1950 items contained some apparent inconsistencies, especially in the domestic and commercial sales, consequently necessary adjustments have been made to correct this condition.

TABLE 1. SALES OF LP-GASES IN THE UNITED STATES
(Thousands of gallons)

Year	Butane	Percent of Total	Propane	Percent of Total	Butane-Propane Mixture	Percent of Total	Total LP-gas	Per-cent	Percent Increase
1946	441,418	25.9	551,250	32.3	711,594	41.8	1,704,262	100.0	33.5
1947	398,635	18.0	863,686	39.1	947,476	42.9	2,209,797	100.0	29.7
1948	512,615	18.7	1,279,744	46.8	944,442	34.5	2,736,801	100.0	23.8
1949	488,801	17.2	1,403,359	49.5	944,439	33.3	2,836,599	100.0	3.6
1950	568,038	16.3	1,938,301	55.7	976,228	28.0	3,482,567	100.0	22.8
1951	708,989	16.8	2,418,790	57.2	1,099,496	26.0	4,227,275	100.0	21.4

1/ Commodity - Industrial Analyst, Petroleum and Natural Gas Branch, Fuels and Explosives Division, Bureau of Mines.

TABLE 2. TRENDS IN THE SALES OF LP-GASES BY PRINCIPAL USES

(Thousands of gallons)

Year	Domestic	Chemical	Synthetic Rubber	Industrial	Gas Mfg.	Internal Combustion	All Other	Total
1946	758,466	311,499	293,892	159,115	86,660	94,592	38	1,704,262
1947	1,150,538	414,267	201,535	173,601	169,332	99,786	738	2,209,797
1948	1,473,289	524,350	225,641	180,518	237,638	92,941	2,424	2,736,801
1949	1,627,550	544,886	177,850	162,197	239,210	77,981	6,925	2,836,599
1950	2,022,464	624,468	228,485	217,078	251,694	129,818	8,560	3,482,567
1951	2,166,813	844,507	374,864	262,102	281,692	289,991	7,306	4,227,275

Note: Domestic and Chemical totals for 1950 revised.

TABLE 3. RELATIVE RANK OF THE PRINCIPAL USES OF LP-GASES ON A PERCENTAGE BASIS

Year	Domestic	Chemical	Synthetic Rubber	Industrial	Gas Mfg.	Internal Combustion	All Other	Total
1946	44.5	18.3	17.2	9.3	5.1	5.6	1/	100.0
1947	52.1	18.7	9.1	7.9	7.7	4.5	1/	100.0
1948	53.8	19.1	8.3	6.6	8.7	3.4	0.1	100.0
1949	57.4	19.2	6.3	5.7	8.4	2.7	0.3	100.0
1950	2/58.1	2/17.9	6.6	6.2	7.2	3.7	0.3	100.0
1951	51.2	20.0	8.9	6.2	6.7	6.8	0.2	100.0

1/ Less than .05 percent.

2/ Revised.

The market for LP-gases showed important increases in all parts of the country in 1951, except in District 1. Most of the liquid gases sold in that area are consumed for domestic and commercial fuel and that particular use in 1951 registered only a nominal gain over the 1950 total. More than 40 percent of the sales in 1951 were reported from District 3 and there the expansion in the demand was outstanding--35 percent over the 1950 total--due mostly to much greater requirements for raw material and solvents going to synthetic rubber and chemical manufacturing plants. District 2 is the second most important market for these liquid gases and sales in the area in 1951 were 13 percent above the 1950 item. Districts 4 and 5 reported only relatively small proportions of the LP-gas sales in 1951, with increases of 24 and 32 percent, respectively, over the 1950 demand.

More than half of the LP-gases were sold for domestic and commercial fuel, and this use increased by 7 percent in 1951 over 1950, compared with a 24-percent gain in 1950. This indicated lower rate of gain in the domestic market in 1951 is largely due to the fact that sales reports were received from a far greater number of dealers throughout the country, who were in closer contact with small consumers, especially those on farms, and therefore were in a better position to "breakout" the proportion of deliveries used for fuel in tractors and other farm equipment and to enter such quantities under "internal-combustion engine fuel." The result of this more detailed reporting of sales as to end-use was to divert quantities, which in prior years had been included under domestic consumption, to the "internal-combustion engine fuel" total.

The fast-growing chemical manufacturing industry bought 35 percent more LP-gases for use as raw material and solvents in 1951 than in 1950 and the quantity credited to these plants represented a fifth of the LP-gas market compared with an 18-percent proportion in 1950. The effort of the Government to stock pile rubber in anticipation of any interruption in inter-national trade was reflected in the large gain--64 percent--in sales of LP-gases for synthetic rubber components in 1951. LP-gases delivered to syntheitc rubber plants accounted for 9 percent of all sales in 1951 and 7 percent in 1950.

The volume of LP-gases reported as sold for internal-combustion engine fuel more than doubled in 1951 compared with 1950 and the total made up about 7 percent of all requirements compared with a 4-percent share in 1950. The unusual gain in this use in 1951, was partly due to more detailed reporting by a greater number of dealers, who were in closer touch with the final consumers, as already mentioned, but it is also connected with the fact that the "item" for reporting internal-combustion engine fuel was more clearly defined in the 1951 schedule, by adding that quantities sold for trucks, buses, tractors, pumping equipment, etc. should be included. It is believed that at least part of such sales, especially quantities used in farm equipment, has been entered under the "domestic" classification in previous years. The change in the wording in the 1951 schedule has also evidently diverted LP-gases consumed as fuel in the petroleum industry and formerly included under "industrial uses" to the "internal-combustion engine fuel" total.

Manufactured-gas companies bought 12 percent more LP-gases in 1951 than in 1950 to use for standby purposes, for enriching their manufactured gas and for direct distribution through their mains to consumers. The quantity required by the manufactured-gas industry accounted for about 7 percent of the LP-gas demand in both 1950 and 1951.

The American Gas Association reports that "in July 1952, liquefied petroleum gas was being delivered through mains in 384 communities in 36 states by 185 utilities. Butane air gas and propane air gas with heating values ranging from 525 to 1,600 Btu. per cubic foot were supplied in 321 of these communities in 32 states. Undiluted butane vapors or mixtures of butane and propane vapors were distributed in 8 communities in Arizona, California and New Mexico. Undiluted propane gas was supplied in 55 communities in Connecticut, Iowa, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, Nevada, New Jersey, New Mexico, North Carolina, South Carolina, Virginia and Wisconsin. An average of 309,300 customers, of which 283,300 were residential, received liquefied petroleum gas from utilities during 1951."

Distributors reported a 21-percent gain in sales of LP-gases to industrial plants for fuel and other uses in 1951 compared to a 34-percent rise in this demand in 1950 over 1949. It is believed that some quantities used by petroleum companies in their internal-combustion engine equipment were formerly included under "industrial uses," which reporting over-inflated the later item.

Very few price quotations for LP-gases are available. Platt's Oil Price Handbook for 1951 shows an average refinery price for commercial and industrial propane at New York Harbor of 7.6 cents a gallon for January 1951. A fractional drop in late January brought the quotation down to 7 cents, where it remained until mid-December, when there was a minor advance to an average of 7.2 cents a gallon for the month. The average value for all of 1951 was 7.1 cents a gallon compared to 6.3 cents in 1950.

TABLE 4. LP-GASES EXPORTED FROM THE UNITED STATES, 1947-51, BY COUNTRIES, (Thousands of gallons) 1/

(U. S. Department of Commerce)

Country	1947	1948	1949	1950	1951
Argentina	8	290	546	54	--
Bermuda	198	269	282	322	405
Brazil	1,570	1,720	3,405	4,686	6,413
Canada	31,591	26,681	31,195	34,032	43,293
Cuba	59	259	463	1,264	2,228
France	2,082	2/	2/	639	1,265
Mexico	16,471	15,497	16,120	25,415	31,976
Philippines, Republic of	402	568	894	751	783
Other countries	852	236	478	600	881
Total	53,233	45,520	53,383	67,763	87,244

1/ Converted from pounds to gallons at 4.5 pounds per gallon.
2/ Less than 500 gallons; included with "Other countries."

Note: E. T. Knudsen, Chief, Petroleum Statistics Branch, Region III, Los Angeles, California made the survey and compiled the sales statistics for District 5 as shown in this report.

TABLE 5

SALES OF LP-GASES BY PRINCIPAL USES IN THE UNITED STATES, 1950-51

(Thousands of gallons)

States by Districts	Domestic		Gas Manufacturing		Industrial		Synthetic Rubber	
	1950 1/	1951	1950	1951	1950	1951	1950	1951
District 1								
Connecticut	16,531	16,612	7,186	6,056	13,684	13,527	--	11
Delaware	6,770	5,031	783	2,176	315	352	--	--
Florida	54,241	59,333	4,515	6,658	436	1,059	--	--
Georgia	48,835	51,775	6,569	9,900	2,254	3,116	--	--
Maine	12,516	11,349	734	461	182	491	--	--
Maryland & D. C.	21,640	20,239	3,684	3,059	1,705	1,458	--	--
Massachusetts	21,967	22,854	14,616	10,947	1,614	2,126	--	--
New Hampshire	9,177	9,529	382	1,165	179	109	--	--
New Jersey	31,017	30,691	12,880	7,926	23,446	26,263	--	31
New York	52,806	52,866	7,914	6,178	3,277	3,022	--	--
North Carolina	42,531	44,614	12,455	16,702	1,579	1,950	--	--
Pennsylvania	38,471	38,403	10,403	17,633	19,740	20,502	71	134
Rhode Island	4,918	5,150	--	4	320	556	--	--
South Carolina	26,712	29,817	3,133	6,650	3,142	3,231	--	--
Vermont	5,115	6,098	1,156	2,009	110	374	--	--
Virginia	22,450	25,069	6,448	4,482	2,095	1,938	282	--
West Virginia	6,706	6,299	582	1,560	8,188	4,077	--	--
Total	422,403	435,729	93,440	103,566	82,266	84,151	353	176
District 2								
Illinois	94,815	96,800	17,368	17,388	15,810	22,342	--	11
Indiana	43,727	45,283	17,701	20,445	5,435	7,028	--	105
Iowa	46,677	49,781	10,092	9,741	5,701	5,358	--	--
Kansas	69,186	79,567	454	92	293	6,272	--	--
Kentucky	26,028	26,489	1,633	1,508	1,861	1,364	410	1,443
Michigan	42,781	42,892	27,294	27,814	22,018	23,302	--	189
Minnesota	53,433	55,279	7,060	7,812	3,874	5,072	--	--
Missouri	62,468	68,501	2,740	4,466	2,510	4,270	--	--
Nebraska	38,995	42,375	1,844	2,225	1,215	1,484	--	--
North Dakota	17,808	20,516	1,485	2,156	156	528	--	--
Ohio	28,457	31,447	5,478	6,012	3,696	4,909	--	1,098
Oklahoma	98,313	105,131	1,913	2,239	2,485	5,672	--	76
South Dakota	30,576	32,158	2,421	3,839	1,294	1,216	--	--
Tennessee	22,229	22,554	4,682	4,102	753	543	--	29
Wisconsin	38,125	41,853	10,916	9,481	32,550	30,122	--	--
Total	713,618	760,626	113,081	119,320	99,651	119,482	410	2,951
District 3								
Alabama	33,256	41,892	2,962	2,934	2,111	3,864	--	--
Arkansas	71,584	73,946	302	489	1,031	2,856	--	--
Louisiana	128,781	128,913	320	688	4,334	4,794	40,840	66,264
Mississippi	51,277	53,903	24	73	462	1,282	--	--
New Mexico	42,040	44,698	4,869	5,444	632	332	--	--
Texas	309,226	347,269	3,432	3,665	16,460	28,752	174,379	273,987
Total	636,164	690,621	11,909	13,293	25,030	41,880	215,219	340,251
District 4								
Colorado	31,887	37,322	1,121	1,538	599	706	--	--
Idaho	3,526	5,540	4,433	4,930	60	427	--	--
Montana	8,179	9,681	84	508	400	620	--	--
Utah	2,162	3,030	278	200	217	200	--	--
Wyoming	18,741	19,536	--	--	--	1,565	--	2
Total	64,495	75,109	5,916	7,176	1,276	3,518	--	2
District 5								
Arizona	19,066	19,137	785	510	18	149	--	--
California	139,305	142,998	7,762	12,708	5,218	7,367	12,503	31,484
Nevada	2,144	4,475	4,085	5,039	9	484	--	--
Oregon	16,437	26,252	9,001	11,081	2,067	2,389	--	--
Washington	8,832	11,866	5,715	8,999	1,543	2,682	--	--
Total	185,784	204,728	27,348	38,337	8,855	13,071	12,503	31,484
Total United States	2,022,464	2,166,813	251,694	281,692	217,078	262,102	228,485	374,864

1/ Revised.

TABLE 5--continued SALES OF LP-GASES BY PRINCIPAL USES IN THE UNITED STATES, 1950-51
(Thousands of gallons)

States by Districts	Chemical		Internal Combustion		All Other		Total		Percent of Tota	
	1950 1/	1951	1950	1951	1950	1951	1950 1/	1951	1950 1/	1951
District 1										
Connecticut	--	--	590	620	--	232	37,991	37,058	5.0	4.7
Delaware	--	933	--	25	--	--	7,868	8,517	1.0	1.1
Florida	--	--	347	341	22	4	59,561	67,395	7.9	8.6
Georgia	4	175	520	1,215	20	209	58,202	66,390	7.7	8.4
Maine	--	--	55	76	--	--	13,487	12,377	1.8	1.6
Maryland & D. C.	--	--	--	--	--	125	27,029	24,881	3.6	3.2
Massachusetts	--	--	--	--	1	39	38,198	35,966	5.1	4.6
New Hampshire	--	--	--	--	--	--	9,738	10,803	1.3	1.4
New Jersey	2,787	3,179	--	19	--	281	70,130	68,390	9.3	8.7
New York	1,517	1,231	--	9	10	13	65,524	63,319	8.7	8.0
North Carolina	--	21	243	1,047	12	197	56,820	64,531	7.5	8.2
Pennsylvania	10,979	10,542	21	278	10	38	79,695	87,530	10.6	11.1
Rhode Island	--	--	--	--	--	--	5,238	5,710	0.7	0.7
South Carolina	--	--	13	64	--	110	33,000	39,872	4.4	5.1
Vermont	--	--	--	--	--	--	6,381	8,481	0.8	1.1
Virginia	--	62	19	32	--	--	31,294	31,583	4.1	4.0
West Virginia	138,496	140,562	530	620	--	--	154,502	153,118	20.5	19.5
Total	153,783	156,705	2,338	4,346	75	1,248	754,658	785,921	100.0	100.0
District 2										
Illinois	137	1,318	10,069	17,072	1,691	379	139,890	155,310	13.6	13.3
Indiana	7,978	36,295	1,477	2,688	--	688	76,318	112,532	7.4	9.7
Iowa	--	--	471	581	--	9	62,941	65,470	6.1	5.6
Kansas	--	911	5,267	12,730	--	122	75,200	99,694	7.3	8.6
Kentucky	50,587	50,062	1,443	1,064	--	62	81,962	81,992	7.9	7.1
Michigan	1,416	2,456	1,075	2,011	--	15	94,584	98,679	9.2	8.5
Minnesota	--	--	3,326	4,144	--	44	67,693	72,351	6.6	6.2
Missouri	--	--	878	1,434	4,100	22	72,696	78,693	7.0	6.7
Nebraska	--	--	1,180	1,591	--	220	43,234	47,895	4.2	4.1
North Dakota	--	--	1,764	1,486	1	130	21,214	24,816	2.0	2.1
Ohio	--	34	1,136	1,372	--	38	38,767	44,910	3.8	3.8
Oklahoma	336	299	5,169	19,105	--	207	108,216	132,729	10.5	11.4
South Dakota	--	--	1,710	2,006	6	240	36,007	39,459	3.5	3.4
Tennessee	196	15	912	224	--	85	28,772	27,552	2.8	2.4
Wisconsin	--	--	1,700	1,599	4	49	83,295	83,104	8.1	7.1
Total	60,650	91,390	37,577	69,107	5,802	2,310	1,030,789	1,165,186	100.0	100.0
District 3										
Alabama	--	--	455	1,007	--	11	38,784	49,708	2.9	2.8
Arkansas	--	--	1,973	4,338	1,453	745	76,343	82,374	5.8	4.6
Louisiana	53,552	104,617	5,775	15,907	1	62	233,603	321,245	17.7	18.0
Mississippi	--	--	3,281	8,009	100	9	55,144	63,276	4.2	3.5
New Mexico	--	--	6,081	7,091	180	1,295	53,802	58,860	4.0	3.3
Texas	334,109	438,303	26,177	120,382	538	242	864,321	1,212,600	65.4	67.8
Total	387,661	542,920	43,742	156,734	2,272	2,364	1,321,997	1,788,063	100.0	100.0
District 4										
Colorado	--	--	996	1,640	200	132	34,803	41,338	46.6	44.8
Idaho	--	--	24	43	--	--	8,043	10,940	10.8	11.8
Montana	--	--	219	719	--	20	8,882	11,548	11.9	12.5
Utah	--	--	26	582	--	39	2,683	4,051	3.6	4.4
Wyoming	--	--	1,508	3,388	--	--	20,249	24,491	27.1	26.5
Total	--	--	2,773	6,372	200	191	74,660	92,368	100.0	100.0
District 5										
Arizona	--	--	2,022	3,527	--	--	21,891	23,323	7.3	5.9
California	22,374	53,492	41,215	49,592	211	1,001	228,588	298,642	76.1	75.5
Nevada	--	--	--	108	--	--	6,238	10,106	2.1	2.5
Oregon	--	--	12	187	--	178	27,517	40,087	9.1	10.1
Washington	--	--	139	18	--	14	16,229	23,579	5.4	6.0
Total	22,374	53,492	43,388	53,432	211	1,193	300,463	395,737	100.0	100.0
Total United States	624,468	844,507	129,818	289,991	8,560	7,306	3,482,567	4,227,275		

1/ Revised.

TABLE 6

SALES OF LP-GASES IN THE UNITED STATES, 1950-51
(Thousands of gallons)

Domestic Uses

States by Districts	Butane		Propane		Mixture		Total LP-Gases		Percent Change
	1951	1950	1951	1950 1/	1951	1950 1/	1951	1950 1/	
District 1									
Connecticut	--	--	16,350	16,021	262	510	16,612	16,531	0.5
Delaware	--	--	5,031	6,770	--	--	5,031	6,770	-25.7
Florida	5,282	838	28,048	27,315	26,003	26,088	59,333	54,241	9.4
Georgia	3,556	2,170	33,102	27,386	15,117	19,279	51,775	48,835	6.0
Maine	--	--	11,339	12,392	10	124	11,349	12,516	-9.3
Maryland & D. C.	570	848	19,669	20,792	--	--	20,239	21,640	-6.5
Massachusetts	1,578	1,245	20,649	20,239	627	483	22,854	21,967	4.0
New Hampshire	--	--	9,458	9,177	71	--	9,529	9,177	3.8
New Jersey	1,305	1,522	29,382	29,453	4	42	30,691	31,017	-1.1
New York	392	2,800	51,618	48,981	856	1,025	52,866	52,806	0.1
North Carolina	1,807	355	38,242	33,431	4,565	8,745	44,614	42,531	4.9
Pennsylvania	310	308	35,920	35,632	2,173	2,531	38,403	38,471	-0.2
Rhode Island	--	--	5,150	4,918	--	--	5,150	4,918	4.7
South Carolina	1,283	712	19,124	18,063	9,410	7,937	29,817	26,712	11.6
Vermont	--	--	6,098	5,115	--	--	6,098	5,115	19.2
Virginia	657	--	24,351	22,383	61	67	25,069	22,450	11.7
West Virginia	65	632	6,234	6,074	--	--	6,299	6,706	-6.1
Total	16,805	11,430	359,765	344,142	59,159	66,831	435,729	422,403	3.2
District 2									
Illinois	7,694	13,758	82,030	74,292	7,076	6,765	96,800	94,815	2.1
Indiana	2,551	6,949	42,265	36,730	467	48	45,283	43,727	3.6
Iowa	410	138	49,109	44,728	262	1,811	49,781	46,677	6.6
Kansas	3,726	1,244	52,931	46,936	22,910	21,006	79,567	69,186	15.0
Kentucky	717	438	23,733	23,167	2,039	2,423	26,489	26,028	1.8
Michigan	3,750	8,207	38,101	33,700	1,041	874	42,892	42,781	0.3
Minnesota	1,015	480	54,023	52,843	241	110	55,279	53,433	3.5
Missouri	2,154	1,388	56,472	51,779	9,875	9,301	68,501	62,468	9.7
Nebraska	1,054	414	37,821	36,012	3,500	2,569	42,375	38,995	8.7
North Dakota	533	--	18,726	17,357	1,257	451	20,516	17,808	15.2
Ohio	438	503	30,937	27,933	72	21	31,447	28,457	10.5
Oklahoma	12,054	9,855	49,047	42,389	44,030	46,069	105,131	98,313	6.9
South Dakota	709	43	31,439	28,633	10	1,900	32,158	30,576	5.2
Tennessee	388	530	17,603	14,270	4,563	7,429	22,554	22,229	1.5
Wisconsin	2,815	2,145	38,708	35,932	330	48	41,853	38,125	9.8
Total	40,008	46,092	622,945	566,701	97,673	100,825	760,626	713,618	6.6
District 3									
Alabama	3,542	769	16,993	16,828	21,357	15,659	41,892	33,256	26.0
Arkansas	2,821	2,873	20,674	19,438	50,451	49,273	73,946	71,584	3.3
Louisiana	23,546	53,317	20,516	12,519	84,851	62,945	128,913	128,781	0.1
Mississippi	4,867	5,868	13,296	14,658	35,740	30,751	53,903	51,277	5.1
New Mexico	3,844	9,178	26,072	16,825	14,782	16,037	44,698	42,040	6.3
Texas	23,425	39,474	96,977	56,501	226,867	213,251	347,269	309,226	12.3
Total	62,045	111,479	194,528	136,769	434,048	387,916	690,621	636,164	8.6
District 4									
Colorado	2,075	2,893	32,995	28,168	2,252	826	37,322	31,887	17.0
Idaho	245	164	5,153	3,362	142	--	5,540	3,526	57.1
Montana	2,106	148	7,575	8,031	--	--	9,681	8,179	18.4
Utah	46	14	2,972	2,123	12	25	3,030	2,162	40.1
Wyoming	2,712	3,825	16,485	14,530	339	386	19,536	18,741	4.2
Total	7,184	7,044	65,180	56,214	2,745	1,237	75,109	64,495	16.5
District 5									
Arizona	--	38	10,263	9,581	8,874	9,447	19,137	19,066	0.4
California	--	552	76,975	70,826	66,023	67,927	142,998	139,305	2.7
Nevada	--	--	4,475	2,137	--	7	4,475	2,144	108.7
Oregon	--	1,888	24,052	12,070	2,200	2,479	26,252	16,437	59.7
Washington	--	120	10,836	7,320	1,030	1,392	11,866	8,832	34.4
Total	--	2,598	126,601	101,934	78,127	81,252	204,728	185,784	10.2
Total United States	126,042	178,643	1,369,019	1,205,760	671,752	638,061	2,166,813	2,022,464	7.1

1/ Revised.

TABLE 7

SALES OF LP-GASES IN THE UNITED STATES, 1950-51
(Thousands of gallons)

Gas Manufacturing

States by Districts	Butane		Propane		Mixture		Total LP-Gases		Percent
	1951	1950	1951	1950	1951	1950	1951	1950	Change
District 1									
Connecticut	72	63	5,984	7,123	--	--	6,056	7,186	-15.7
Delaware	7	--	2,169	783	--	--	2,176	783	177.9
Florida	490	240	4,697	4,019	1,471	256	6,658	4,515	47.5
Georgia	684	112	7,639	6,363	1,577	94	9,900	6,569	50.7
Maine	--	--	461	734	--	--	461	734	-37.2
Maryland & D. C.	11	--	3,048	3,684	--	--	3,059	3,684	-17.0
Massachusetts	3,667	6,494	5,268	5,102	2,012	3,020	10,947	14,616	-25.1
New Hampshire	--	--	1,165	382	--	--	1,165	382	205.0
New Jersey	1,570	3,847	6,356	9,033	--	--	7,926	12,880	-38.5
New York	1,529	3,415	4,649	4,479	--	20	6,178	7,914	-21.9
North Carolina	841	--	15,861	12,455	--	--	16,702	12,455	34.1
Pennsylvania	1,084	2,374	13,708	8,029	2,841	--	17,633	10,403	69.5
Rhode Island	--	--	4	--	--	--	4	--	--
South Carolina	218	61	5,715	2,768	717	304	6,650	3,133	112.3
Vermont	--	--	2,009	1,156	--	--	2,009	1,156	73.8
Virginia	455	836	4,027	5,612	--	--	4,482	6,448	-30.5
West Virginia	439	--	1,121	582	--	--	1,560	582	168.0
Total	11,067	17,442	83,881	72,304	8,618	3,694	103,566	93,440	10.8
District 2									
Illinois	2,406	3,384	13,591	11,853	1,391	2,131	17,388	17,368	0.1
Indiana	1,227	3,258	19,114	14,115	104	328	20,445	17,701	15.5
Iowa	2,212	3,201	6,794	6,481	735	410	9,741	10,092	-3.5
Kansas	10	10	82	75	--	369	92	454	-79.7
Kentucky	182	--	316	--	1,010	1,633	1,508	1,633	-7.7
Michigan	2,950	8,054	24,864	19,240	--	--	27,814	27,294	1.9
Minnesota	655	1,380	7,066	5,650	91	30	7,812	7,060	10.7
Missouri	11	102	4,455	2,638	--	--	4,466	2,740	63.0
Nebraska	--	--	2,216	1,844	9	--	2,225	1,844	20.7
North Dakota	72	80	2,084	1,405	--	--	2,156	1,485	45.2
Ohio	--	--	6,012	5,478	--	--	6,012	5,478	9.7
Oklahoma	--	--	1,859	1,913	380	--	2,239	1,913	17.0
South Dakota	83	170	3,196	1,771	560	480	3,839	2,421	58.6
Tennessee	666	400	3,024	4,282	412	--	4,102	4,682	-12.4
Wisconsin	867	168	8,594	10,748	20	--	9,481	10,916	-13.1
Total	11,341	20,207	103,267	87,493	4,712	5,381	119,320	113,081	5.5
District 3									
Alabama	423	770	1,376	1,357	1,135	835	2,934	2,962	-0.9
Arkansas	--	--	68	302	421	--	489	302	61.9
Louisiana	--	--	688	145	--	175	688	320	115.0
Mississippi	--	--	73	24	--	--	73	24	204.2
New Mexico	44	208	4,301	3,582	1,099	1,079	5,444	4,869	11.8
Texas	--	--	3,519	927	146	2,505	3,665	3,432	6.8
Total	467	978	10,025	6,337	2,801	4,594	13,293	11,909	11.6
District 4									
Colorado	--	--	1,538	1,121	--	--	1,538	1,121	37.2
Idaho	350	200	4,580	4,080	--	153	4,930	4,433	11.2
Montana	488	84	20	--	--	--	508	84	504.8
Utah	--	--	200	278	--	--	200	278	-28.1
Wyoming	--	--	--	--	--	--	--	--	--
Total	838	284	6,338	5,479	--	153	7,176	5,916	21.3
District 5									
Arizona	--	--	314	354	196	431	510	785	-35.0
California	--	--	10,351	5,483	2,357	2,279	12,708	7,762	63.7
Nevada	--	--	3,839	3,152	1,200	933	5,039	4,085	23.4
Oregon	--	120	9,777	8,881	1,304	--	11,081	9,001	23.1
Washington	2,986	1,893	3,434	2,864	2,579	958	8,999	5,715	57.5
Total	2,986	2,013	27,715	20,734	7,636	4,601	38,337	27,348	40.[illegible]
Total United States	26,699	40,924	231,226	192,347	23,767	18,423	281,692	251,694	11.[illegible]

TABLE 8

SALES OF LP-GASES IN THE UNITED STATES, 1950-51

(Thousands of gallons)

dustrial

States by Districts	Butane		Propane		Mixture		Total LP-Gases		Percent Change
	1951	1950	1951	1950	1951	1950	1951	1950	
District 1									
Connecticut	1,266	1,149	12,250	12,003	11	532	13,527	13,684	-1.1
Delaware	--	--	352	315	--	--	352	315	11.7
Florida	--	--	1,059	232	--	204	1,059	436	142.9
Georgia	51	60	770	1,259	2,295	935	3,116	2,254	38.2
Maine	--	--	491	182	--	--	491	182	169.8
Maryland & D. C.	--	--	1,458	1,705	--	--	1,458	1,705	-14.5
Massachusetts	--	--	2,126	1,614	--	--	2,126	1,614	31.7
New Hampshire	--	--	109	179	--	--	109	179	-39.1
New Jersey	3,197	1,577	23,056	21,859	10	10	26,263	23,446	12.0
New York	207	454	2,815	2,823	--	--	3,022	3,277	-7.8
North Carolina	9	--	1,904	1,179	37	400	1,950	1,579	23.5
Pennsylvania	603	717	19,867	19,023	32	--	20,502	19,740	3.9
Rhode Island	--	--	556	320	--	--	556	320	73.8
South Carolina	267	227	2,964	2,915	--	--	3,231	3,142	2.8
Vermont	--	--	374	110	--	--	374	110	240.0
Virginia	--	--	1,938	2,095	--	--	1,938	2,095	-7.5
West Virginia	--	318	4,077	7,870	--	--	4,077	8,188	-50.2
Total	5,600	4,502	76,166	75,683	2,385	2,081	84,151	82,266	2.3
District 2									
Illinois	4,723	5,303	15,452	10,266	2,167	241	22,342	15,810	41.3
Indiana	2,890	2,954	4,138	2,481	--	--	7,028	5,435	29.3
Iowa	--	1,440	5,337	4,250	21	11	5,358	5,701	-6.0
Kansas	5,026	60	936	233	310	--	6,272	293	2040.6
Kentucky	--	--	1,364	1,861	--	--	1,364	1,861	-26.7
Michigan	1,973	8,565	21,329	12,714	--	739	23,302	22,018	5.8
Minnesota	729	1,024	3,692	2,830	651	20	5,072	3,874	30.9
Missouri	--	417	3,466	1,951	804	142	4,270	2,510	70.1
Nebraska	11	--	1,465	1,215	8	--	1,484	1,215	22.1
North Dakota	31	--	477	136	20	20	528	156	238.5
Ohio	229	38	4,680	3,658	--	--	4,909	3,696	32.8
Oklahoma	61	--	3,901	1,245	1,710	1,240	5,672	2,485	128.2
South Dakota	--	--	1,216	1,294	--	--	1,216	1,294	-6.0
Tennessee	35	--	508	753	--	--	543	753	-27.9
Wisconsin	13,928	14,462	14,385	16,758	1,809	1,330	30,122	32,550	-7.5
Total	29,636	34,263	82,346	61,645	7,500	3,743	119,482	99,651	19.9
District 3									
Alabama	1,639	702	1,193	1,409	1,032	--	3,864	2,111	83.0
Arkansas	194	--	676	601	1,986	430	2,856	1,031	177.0
Louisiana	1,311	145	81	316	3,402	3,873	4,794	4,334	10.6
Mississippi	--	--	515	149	767	313	1,282	462	177.5
New Mexico	--	--	122	435	210	197	332	632	-47.5
Texas	1,650	664	14,681	13,397	12,421	2,399	28,752	16,460	74.7
Total	4,794	1,511	17,268	16,307	19,818	7,212	41,880	25,030	67.3
District 4									
Colorado	83	--	618	456	5	143	706	599	17.9
Idaho	--	--	427	60	--	--	427	60	611.7
Montana	184	--	436	400	--	--	620	400	55.0
Utah	--	--	200	217	--	--	200	217	-7.8
Wyoming	1,342	--	223	--	--	--	1,565	--	--
Total	1,609	--	1,904	1,133	5	143	3,518	1,276	175.7
District 5									
Arizona	--	--	149	18	--	--	149	18	727.8
California	1,411	--	3,386	4,516	2,570	702	7,367	5,218	41.2
Nevada	--	--	184	9	300	--	484	9	5277.8
Oregon	--	--	1,887	925	502	1,142	2,389	2,067	15.6
Washington	1,515	722	1,167	821	--	--	2,682	1,543	73.8
Total	2,926	722	6,773	6,289	3,372	1,844	13,071	8,855	47.6
Total United States	44,565	40,998	184,457	161,057	33,080	15,023	262,102	217,078	20.7

TABLE 9

SALES OF LP-GASES IN THE UNITED STATES, 1950-51
(Thousands of gallons)

Synthetic Rubber

States by Districts	Butane		Propane		Mixture		Total LP-Gases		Percent Change
	1951	1950	1951	1950	1951	1950	1951	1950	
District 1									
Connecticut	11	--	--	--	--	--	11	--	--
Delaware	--	--	--	--	--	--	--	--	--
Florida	--	--	--	--	--	--	--	--	--
Georgia	--	--	--	--	--	--	--	--	--
Maine	--	--	--	--	--	--	--	--	--
Maryland & D. C.	--	--	--	--	--	--	--	--	--
Massachusetts	--	--	--	--	--	--	--	--	--
New Hampshire	--	--	--	--	--	--	--	--	--
New Jersey	31	--	--	--	--	--	31	--	--
New York	--	--	--	--	--	--	--	--	--
North Carolina	--	--	--	--	--	--	--	--	--
Pennsylvania	93	--	41	71	--	--	134	71	88.7
Rhode Island	--	--	--	--	--	--	--	--	--
South Carolina	--	--	--	--	--	--	--	--	--
Vermont	--	--	--	--	--	--	--	--	--
Virginia	--	--	--	282	--	--	--	282	--
West Virginia	--	--	--	--	--	--	--	--	--
Total	135	--	41	353	--	--	176	353	-50.1
District 2									
Illinois	11	--	--	--	--	--	11	--	--
Indiana	105	--	--	--	--	--	105	--	--
Iowa	--	--	--	--	--	--	--	--	--
Kansas	--	--	--	--	--	--	--	--	--
Kentucky	1,443	--	--	410	--	--	1,443	410	252.0
Michigan	189	--	--	--	--	--	189	--	--
Minnesota	--	--	--	--	--	--	--	--	--
Missouri	--	--	--	--	--	--	--	--	--
Nebraska	--	--	--	--	--	--	--	--	--
North Dakota	--	--	--	--	--	--	--	--	--
Ohio	1,098	--	--	--	--	--	1,098	--	--
Oklahoma	--	--	--	--	76	--	76	--	--
South Dakota	--	--	--	--	--	--	--	--	--
Tennessee	29	--	--	--	--	--	29	--	--
Wisconsin	--	--	--	--	--	--	--	--	--
Total	2,875	--	--	410	76	--	2,951	410	619.8
District 3									
Alabama	--	--	--	--	--	--	--	--	--
Arkansas	--	--	--	--	--	--	--	--	--
Louisiana	61,392	40,840	4,872	--	--	--	66,264	40,840	62.3
Mississippi	--	--	--	--	--	--	--	--	--
New Mexico	--	--	--	--	--	--	--	--	--
Texas	263,978	174,379	--	--	10,009	--	273,987	174,379	57.1
Total	325,370	215,219	4,872	--	10,009	--	340,251	215,219	58.1
District 4									
Colorado	--	--	--	--	--	--	--	--	--
Idaho	--	--	--	--	--	--	--	--	--
Montana	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--
Wyoming	--	--	2	--	--	--	2	--	--
Total	--	--	2	--	--	--	2	--	--
District 5									
Arizona	--	--	--	--	--	--	--	--	--
California	29,104	1,080	366	11,423	2,014	--	31,484	12,503	151.8
Nevada	--	--	--	--	--	--	--	--	--
Oregon	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--
Total	29,104	1,080	366	11,423	2,014	--	31,484	12,503	151.8
Total United States	357,484	216,299	5,281	12,186	12,099	--	374,864	228,485	64.1

TABLE 10

SALES OF LP-GASES IN THE UNITED STATES, 1950-51
(Thousands of gallons)

Chemical Plants

States by Districts	Butane		Propane		Mixture		Total LP-Gases		Percent
	1951	1950	1951	1950 1/	1951	1950	1951	1950 1/	Change
District 1									
Connecticut	--	--	--	--	--	--	--	--	--
Delaware	--	--	933	--	--	--	933	--	--
Florida	--	--	--	--	--	--	--	--	--
Georgia	--	--	175	4	--	--	174	4	4250.0
Maine	--	--	--	--	--	--	--	--	--
Maryland & D. C.	--	--	--	--	--	--	--	--	--
Massachusetts	--	--	--	--	--	--	--	--	--
New Hampshire	--	--	--	--	--	--	--	--	--
New Jersey	3,179	2,302	--	485	--	--	3,179	2,787	14.1
New York	52	--	1,179	1,517	--	--	1,231	1,517	-18.9
North Carolina	--	--	21	--	--	--	21	--	--
Pennsylvania	--	--	10,500	10,979	42	--	10,542	10,979	-4.0
Rhode Island	--	--	--	--	--	--	--	--	--
South Carolina	--	--	--	--	--	--	--	--	--
Vermont	--	--	--	--	--	--	--	--	--
Virginia	--	--	62	--	--	--	62	--	--
West Virginia	1,413	3,765	6,264	26,622	132,885	108,109	140,562	138,496	1.5
Total	4,644	6,067	19,134	39,607	132,927	108,109	156,705	153,783	1.9
District 2									
Illinois	1,042	10	276	127	--	--	1,318	137	862.0
Indiana	--	--	2,929	6,760	33,366	1,218	36,295	7,978	354.9
Iowa	--	--	--	--	--	--	--	--	--
Kansas	--	--	--	--	911	--	911	--	--
Kentucky	--	--	261	--	49,801	50,587	50,062	50,587	-1.0
Michigan	1,117	983	1,339	433	--	--	2,456	1,416	73.4
Minnesota	--	--	--	--	--	--	--	--	--
Missouri	--	--	--	--	--	--	--	--	--
Nebraska	--	--	--	--	--	--	--	--	--
North Dakota	--	--	--	--	--	--	--	--	--
Ohio	--	--	34	--	--	--	34	--	--
Oklahoma	--	--	158	--	141	336	299	336	-11.0
South Dakota	--	--	--	--	--	--	--	--	--
Tennessee	--	--	15	196	--	--	15	196	-92.3
Wisconsin	--	--	--	--	--	--	--	--	--
Total	2,159	993	5,012	7,516	84,219	52,141	91,390	60,650	50.7
District 3									
Alabama	--	--	--	--	--	--	--	--	--
Arkansas	--	--	--	--	--	--	--	--	--
Louisiana	--	20	104,617	53,532	--	--	104,617	53,552	95.4
Mississippi	--	--	--	--	--	--	--	--	--
New Mexico	--	--	--	--	--	--	--	--	--
Texas	98,055	63,257	340,222	197,717	26	73,135	438,303	334,109	31.2
Total	98,055	63,277	444,839	251,249	26	73,135	542,920	387,661	40.1
District 4									
Colorado	--	--	--	--	--	--	--	--	--
Idaho	--	--	--	--	--	--	--	--	--
Montana	--	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--	--
Wyoming	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--
District 5									
Arizona	--	--	--	--	--	--	--	--	--
California	14,055	158	39,437	4,087	--	18,129	53,492	22,374	139.1
Nevada	--	--	--	--	--	--	--	--	--
Oregon	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--
Total	14,055	158	39,437	4,087	--	18,129	53,492	22,374	139.1
Total United States	118,913	70,495	508,422	302,459	217,172	251,514	844,507	624,468	35.2

1/ Revised.

TABLE 11

SALES OF LP-GASES IN THE UNITED STATES, 1950-51
(Thousands of gallons)

Internal Combustion

States by Districts	Butane		Propane		Mixture		Total LP-Gases		Percent Change
	1951	1950	1951	1950	1951	1950	1951	1950	
District 1									
Connecticut	--	--	620	590	--	--	620	590	5.1
Delaware	--	--	25	--	--	--	25	--	--
Florida	--	--	264	127	77	220	341	347	-1.7
Georgia	--	--	1,186	57	29	463	1,215	520	133.7
Maine	--	--	76	55	--	--	76	55	38.2
Maryland & D. C.	--	--	--	--	--	--	--	--	--
Massachusetts	--	--	--	--	--	--	--	--	--
New Hampshire	--	--	--	--	--	--	--	--	--
New Jersey	--	--	19	--	--	--	19	--	--
New York	--	--	9	--	--	--	9	--	--
North Carolina	--	90	48	42	999	111	1,047	243	330.9
Pennsylvania	--	--	278	21	--	--	278	21	1223.8
Rhode Island	--	--	--	--	--	--	--	--	--
South Carolina	--	--	38	13	26	--	64	13	392.3
Vermont	--	--	--	--	--	--	--	--	--
Virginia	--	--	32	19	--	--	32	19	68.4
West Virginia	--	--	620	530	--	--	620	530	17.0
Total	--	90	3,215	1,454	1,131	794	4,346	2,338	85.9
District 2									
Illinois	133	1,351	10,932	6,480	6,007	2,238	17,072	10,069	69.6
Indiana	--	329	1,960	1,148	728	--	2,688	1,477	82.0
Iowa	32	--	530	460	19	11	581	471	23.4
Kansas	3,449	590	3,790	1,424	5,491	3,253	12,730	5,267	141.7
Kentucky	--	164	489	1,264	575	15	1,064	1,443	-26.3
Michigan	--	--	2,011	601	--	474	2,011	1,075	87.1
Minnesota	31	53	2,688	1,753	1,425	1,520	4,144	3,326	24.6
Missouri	826	33	546	498	62	347	1,434	878	63.3
Nebraska	7	51	1,373	998	211	131	1,591	1,180	34.8
North Dakota	30	--	1,396	239	60	1,525	1,486	1,764	-15.8
Ohio	14	--	1,358	1,136	--	--	1,372	1,136	20.8
Oklahoma	1,889	1,472	5,866	484	11,350	3,213	19,105	5,169	269.6
South Dakota	--	--	2,006	1,710	--	--	2,006	1,710	17.3
Tennessee	16	--	204	576	4	336	224	912	-75.4
Wisconsin	132	942	1,396	234	71	524	1,599	1,700	-5.9
Total	6,559	4,985	36,545	19,005	26,003	13,587	69,107	37,577	83.9
District 3									
Alabama	--	--	98	452	909	3	1,007	455	121.3
Arkansas	755	231	1,970	419	1,613	1,323	4,338	1,973	119.9
Louisiana	31	213	10,653	--	5,223	5,562	15,907	5,775	175.4
Mississippi	70	--	5,419	1,089	2,520	2,192	8,009	3,281	144.1
New Mexico	1,698	2,069	3,996	3,548	1,397	464	7,091	6,081	16.6
Texas	22,322	6,876	12,420	2,179	85,640	17,122	120,382	26,177	359.9
Total	24,876	9,389	34,556	7,687	97,302	26,666	156,734	43,742	258.3
District 4									
Colorado	399	255	1,006	472	235	269	1,640	996	64.7
Idaho	--	2	43	22	--	--	43	24	79.2
Montana	427	99	292	120	--	--	719	219	228.3
Utah	--	--	382	26	200	--	582	26	2138.5
Wyoming	2,014	--	372	1,470	1,002	38	3,388	1,508	124.7
Total	2,840	356	2,095	2,110	1,437	307	6,372	2,773	129.8
District 5									
Arizona	16	--	2,757	822	754	1,200	3,527	2,022	74.4
California	--	74	35,463	32,596	14,129	8,545	49,592	41,215	20.3
Nevada	--	--	108	--	--	--	108	--	--
Oregon	--	--	187	12	--	--	187	12	1458.3
Washington	--	--	18	139	--	--	18	139	-87.1
Total	16	74	38,533	33,569	14,883	9,745	53,432	43,388	23.1
Total United States	34,291	14,894	114,944	63,825	140,756	51,099	289,991	129,818	123.4

TABLE 12

SALES OF LP-GASES IN THE UNITED STATES, 1950-51
(Thousands of gallons)

All Other

States by Districts	Butane		Propane		Mixture		Total LP-Gases		Percent Change
	1951	1950	1951	1950	1951	1950	1951	1950	
District 1									
Connecticut	--	--	232	--	--	--	232	--	
Delaware	--	--	--	--	--	--	--	--	
Florida	--	--	--	--	4	22	4	22	
Georgia	3	--	175	20	31	--	209	20	
Maine	--	--	--	--	--	--	--	--	
Maryland & D. C.	--	--	125	--	--	--	125	--	
Massachusetts	--	--	39	1	--	--	39	1	
New Hampshire	--	--	--	--	--	--	--	--	
New Jersey	--	--	281	--	--	--	281	--	
New York	--	--	13	10	--	--	13	10	
North Carolina	98	--	99	12	--	--	197	12	
Pennsylvania	--	--	38	10	--	--	38	10	
Rhode Island	--	--	--	--	--	--	--	--	
South Carolina	--	--	110	--	--	--	110	--	
Vermont	--	--	--	--	--	--	--	--	
Virginia	--	--	--	--	--	--	--	--	
West Virginia	--	--	--	--	--	--	--	--	
Total	101	--	1,112	53	35	22	1,248	75	1564.0
District 2									
Illinois	--	1,403	374	288	5	--	379	1,691	
Indiana	--	--	688	--	--	--	688	--	
Iowa	--	--	9	--	--	--	9	--	
Kansas	4	--	114	--	4	--	122	--	
Kentucky	20	--	42	--	--	--	62	--	
Michigan	--	--	15	--	--	--	15	--	
Minnesota	10	--	34	--	--	--	44	--	
Missouri	--	4,100	22	--	--	--	22	4,100	
Nebraska	--	--	210	--	10	--	220	--	
North Dakota	--	--	130	1	--	--	130	1	
Ohio	--	--	38	--	--	--	38	--	
Oklahoma	45	--	126	--	36	--	207	--	
South Dakota	--	--	--	6	240	--	240	6	
Tennessee	--	--	85	--	--	--	85	--	
Wisconsin	--	--	39	4	10	--	49	4	
Total	79	5,503	1,926	299	305	--	2,310	5,802	-60.2
District 3									
Alabama	--	--	11	--	--	--	11	--	
Arkansas	--	--	500	--	245	1,453	745	1,453	
Louisiana	7	1	--	--	55	--	62	1	
Mississippi	--	50	9	25	--	25	9	100	
New Mexico	386	--	909	10	--	170	1,295	180	
Texas	39	56	48	62	155	420	242	538	
Total	432	107	1,477	97	455	2,068	2,364	2,272	4.0
District 4									
Colorado	--	--	132	200	--	--	132	200	
Idaho	--	--	--	--	--	--	--	--	
Montana	--	--	20	--	--	--	20	--	
Utah	--	--	39	--	--	--	39	--	
Wyoming	--	--	--	--	--	--	--	--	
Total	--	--	191	200	--	--	191	200	-4.5
District 5									
Arizona	--	--	--	--	--	--	--	--	
California	383	175	543	18	75	18	1,001	211	
Nevada	--	--	--	--	--	--	--	--	
Oregon	--	--	178	--	--	--	178	--	
Washington	--	--	14	--	--	--	14	--	
Total	383	175	735	18	75	18	1,193	211	465.4
Total United States	995	5,785	5,441	667	870	2,108	7,306	8,560	-14.6

TABLE 13

SALES OF LP-GASES IN THE UNITED STATES, 1950-51

(Thousands of gallons)

Total LP-Gases

States by Districts	Butane		Propane		Mixture		Total LP-Gases		Percent Change
	1951	1950	1951	1950 1/	1951	1950 1/	1951	1950 1/	
District 1									
Connecticut	1,349	1,212	35,436	35,737	273	1,042	37,058	37,991	-2.5
Delaware	7	---	8,510	7,868	--	---	8,517	7,868	8.2
Florida	5,772	1,078	34,068	31,693	27,555	26,790	67,395	59,561	13.2
Georgia	4,294	2,342	43,047	35,089	19,049	20,771	66,390	58,202	14.1
Maine	---	---	12,367	13,363	10	124	12,377	13,487	-8.2
Maryland & D. C.	581	848	24,300	26,181	--	---	24,881	27,029	-7.9
Massachusetts	5,245	7,739	28,082	26,956	2,639	3,503	35,966	38,198	-5.8
New Hampshire	---	---	10,732	9,738	71	---	10,803	9,738	10.9
New Jersey	9,282	9,248	59,094	60,830	14	52	68,390	70,130	-2.5
New York	2,180	6,669	60,283	57,810	856	1,045	63,319	65,524	-3.4
North Carolina	2,755	445	56,175	47,119	5,601	9,256	64,531	56,820	13.6
Pennsylvania	2,090	3,399	80,352	73,765	5,088	2,531	87,530	79,695	9.8
Rhode Island	---	--	5,710	5,238	--	--	5,710	5,238	9.0
South Carolina	1,768	1,000	27,951	23,759	10,153	8,241	39,872	33,000	20.8
Vermont	---	---	8,481	6,381	--	--	8,481	6,381	32.9
Virginia	1,112	836	30,410	30,391	61	67	31,583	31,294	0.9
West Virginia	1,917	4,715	18,316	41,678	132,885	108,109	153,118	154,502	-0.9
Total	38,352	39,531	543,314	533,596	204,255	181,531	785,921	754,658	4.1
District 2									
Illinois	16,009	25,209	122,655	103,306	16,646	11,375	155,310	139,890	11.0
Indiana	6,773	13,490	71,094	61,234	34,665	1,594	112,532	76,318	47.5
Iowa	2,654	4,779	61,779	55,919	1,037	2,243	65,470	62,941	4.0
Kansas	12,215	1,904	57,853	48,668	29,626	24,628	99,694	75,200	32.6
Kentucky	2,362	602	26,205	26,702	53,425	54,658	81,992	81,962	---
Michigan	9,979	25,809	87,659	66,688	1,041	2,087	98,679	94,584	4.3
Minnesota	2,440	2,937	67,503	63,076	2,408	1,680	72,351	67,693	6.9
Missouri	2,991	6,040	64,961	56,866	10,741	9,790	78,693	72,696	8.2
Nebraska	1,072	465	43,085	40,069	3,738	2,700	47,895	43,234	10.8
North Dakota	666	80	22,813	19,138	1,337	1,996	24,816	21,214	17.0
Ohio	1,779	541	43,059	38,205	72	21	44,910	38,767	15.8
Oklahoma	14,049	11,327	60,957	46,031	57,723	50,858	132,729	108,216	22.7
South Dakota	792	213	37,857	33,414	810	2,380	39,459	36,007	9.6
Tennessee	1,134	930	21,439	20,077	4,979	7,765	27,552	28,772	-4.2
Wisconsin	17,742	17,717	63,122	63,676	2,240	1,902	83,104	83,295	-0.2
Total	92,657	112,043	852,041	743,069	220,488	175,677	1,165,186	1,030,789	13.0
District 3									
Alabama	5,604	2,241	19,671	20,046	24,433	16,497	49,708	38,784	28.2
Arkansas	3,770	3,104	23,888	20,760	54,716	52,479	82,374	76,343	7.9
Louisiana	86,287	94,536	141,427	66,512	93,531	72,555	321,245	233,603	37.5
Mississippi	4,937	5,918	19,312	15,945	39,027	33,281	63,276	55,144	14.7
New Mexico	5,972	11,455	35,400	24,400	17,488	17,947	58,860	53,802	9.4
Texas	409,469	284,706	467,867	270,783	335,264	308,832	1,212,600	864,321	40.3
Total	516,039	401,960	707,565	418,446	564,459	501,591	1,788,063	1,321,997	35.3
District 4									
Colorado	2,557	3,148	36,289	30,417	2,492	1,238	41,338	34,803	18.8
Idaho	595	366	10,203	7,524	142	153	10,940	8,043	36.0
Montana	3,205	331	8,343	8,551	---	--	11,548	8,882	30.0
Utah	46	14	3,793	2,644	212	25	4,051	2,683	51.0
Wyoming	6,068	3,825	17,082	16,000	1,341	424	24,491	20,249	20.9
Total	12,471	7,684	75,710	65,136	4,187	1,840	92,368	74,660	23.7
District 5									
Arizona	16	38	13,483	10,775	9,824	11,078	23,323	21,891	6.5
California	44,953	2,039	166,521	128,949	87,168	97,600	298,642	228,588	30.6
Nevada	---	---	8,606	5,298	1,500	940	10,106	6,238	62.0
Oregon	---	2,008	36,081	21,888	4,006	3,621	40,087	27,517	45.7
Washington	4,501	2,735	15,469	11,144	3,609	2,350	23,579	16,229	45.3
Total	49,470	6,820	240,160	178,054	106,107	115,589	395,737	300,463	31.7
Total United States	708,989	568,038	2,418,790	1,938,301	1,099,496	976,228	4,227,275	3,482,567	21.4
Exports							87,244	67,763	28.7
Grand Total							4,314,519	3,550,330	21.5

1/ Revised.

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Oscar L. Chapman, Secretary
J. J. FORBES, Director

FOR RELEASE August 29, 1952
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SHARP INCREASE IN DISTILLATE SALES; ONLY NOMINAL GAIN FOR RESIDUALS AND KEROSINE IN 1951

By A. T. Coumbe 1/ and I. F. Avery 1/

Sales of distillate fuel oil again showed an important increase in 1951 as in 1950, while requirements for residual grades of fuel oil and for kerosine were only slightly above the 1950 totals, according to a survey made by the Petroleum and Natural Gas Branch, Fuels and Explosives Division, Bureau of Mines, United States Department of the Interior. Distributors reported a gain of 14 percent in sales of distillates in 1951 compared with a 20-percent increase in 1950 over 1949, while the total for residuals in 1951 was only 2 percent above 1950 deliveries in contrast to a 12-percent rise in 1950 over 1949. The kerosine market showed a similar leveling off--a 4-percent gain in 1951 compared with a 15-percent increment in 1950.

A less active domestic market for liquid fuels is even more evident according to the indicated demand figures shown in the Monthly Petroleum Statement for June 1952, recently released by the Bureau of Mines. The percentage changes for the different demands during the first six months period of 1952 compared with the relative gains in the same months of 1951 are as follows: distillate fuel oil, a 9 percent increase in 1952 compared with an 18-percent gain in 1951; residual fuel oil, a decline of 6 percent in 1952 in contrast to a 7-percent increase in 1951; and kerosine, a 2-percent gain in 1952 against a 9-percent expansion in 1951.

Exports of light and heavy fuel oils and kerosine all showed unusual increases in 1951 compared with foreign requirements in 1950, due largely to the closing of the Abadan refinery in Iran in June 1951 and the necessary re-alignment of world supply sources for these liquid fuels. Over-seas shipments of both distillate and residual fuel oils "sky-rocketed" to gains of 79 percent, respectively, in 1951 over the 1950 totals, while the kerosine shipped in foreign trade in 1951 was more than triple the 1950 quantity.

The unusually large exports of fuel oil and kerosine reported for 1951 have mounted to even higher levels during the first six months of 1952, with the distillate fuel oil total for the period up 93 percent over the comparative demand in 1951, with residual grades up by 48 percent and the kerosine total in 1952 more than double--131 percent--the January-June 1951 export requirements.

1/ Commodity - Industrial Analyst, Petroleum and Natural Gas Branch, Fuels and Explosives Division, Bureau of Mines.

Note: The survey of fuel oil and kerosine sales in the Pacific Coast Marketing area was made by E. T. Knudsen, Chief, Petroleum Statistics Branch, Region III, U. S. Bureau of Mines, Los Angeles, California.

Distillate Fuel Oils.- Quantities of distillate fuel oils sold for all principal uses in 1951 were well above--14 percent--the comparative 1950 totals, except deliveries to gas and electric power plants, which were down by 27 percent. The railroads in their shift to Diesel equipment, strongly evident in recent years, bought 23 percent more light fuel oils, mostly Diesel grades, in 1951 than in 1950 and furthermore the 1951 total for these distillates delivered to railroads was greater in volume than that for the residual grades for the first time. Sales of distillates, mostly Diesel fuel, to vessels registered a 12-percent increase in 1951 over the 1950 total, which is in contrast to a 2-percent decline in 1950. Bunker deliveries of light fuel oils to vessels engaged in foreign trade increased by 45 percent from 5,229,000 barrels in 1950 to 7,580,000 in 1951, according to data compiled by the Bureau of the Census, United States Department of Commerce, while the indicated quantities of light fuel oils sold to vessels using coastal and inland waters declined from 7,643,000 barrels in 1950 to 6,813,000 in 1951.

The pronounced drop of 27 percent in 1951 in sales of distillate grades of fuel oil to gas and electric power plants, which is in contrast to a gain of 5 percent in 1950 over 1949, was largely due to higher prices for fuel oil in 1951 and a resulting shift to other fuels and sources of energy, such as coal, natural gas and hydro power, the total consumption of which by electric power plants increased greatly in 1951 over 1950, according to records compiled by the Federal Power Commission. Smelters, mines, and manufacturing plants increased their purchases of distillate fuel oils by 13 percent in 1951 over 1950, compared with a 41-percent rise in 1950 over 1949. This lower rate of gain in 1951 in the requirements for light fuel oils by industrial plants, with the index of manufacturing up to 229 compared with 209 in 1950, according to the Federal Reserve System, was probably due to increased fuel oil prices in contrast to almost unchanged quotations for industrial grades of bituminous coal.

In 1951 with a 10-percent increase in domestic burners over the 1950 number in use and with practically no change in the weather or the need for heating as measured by degree days, sales of light fuel oil (Grades 1 - 4) for space heating were 13 percent above the 1950 total. This gain in demand compares with a 16-percent increase in 1950, when burners in use were 15 percent above 1949 installations and the weather was 8 percent colder. The light fuel oil sold for heating accounted for approximately 56 percent of the total distillate fuel oil sales in both 1950 and 1951.

Stepped-up military activities during all of 1951 are reflected in a 29-percent rise in the purchases of light fuel oils by the armed services in contrast to a gain of 7 percent in 1950 over 1949 requirements. Oil companies use only a relatively small amount of distillate fuel oils in their various operations, however with crude production up by 14 percent and a 13-percent gain in crude runs at refineries in 1951 compared with 1950, the quantity consumed increased by 55 percent, which compares with a 37-percent gain in 1950 over the 1949 total.

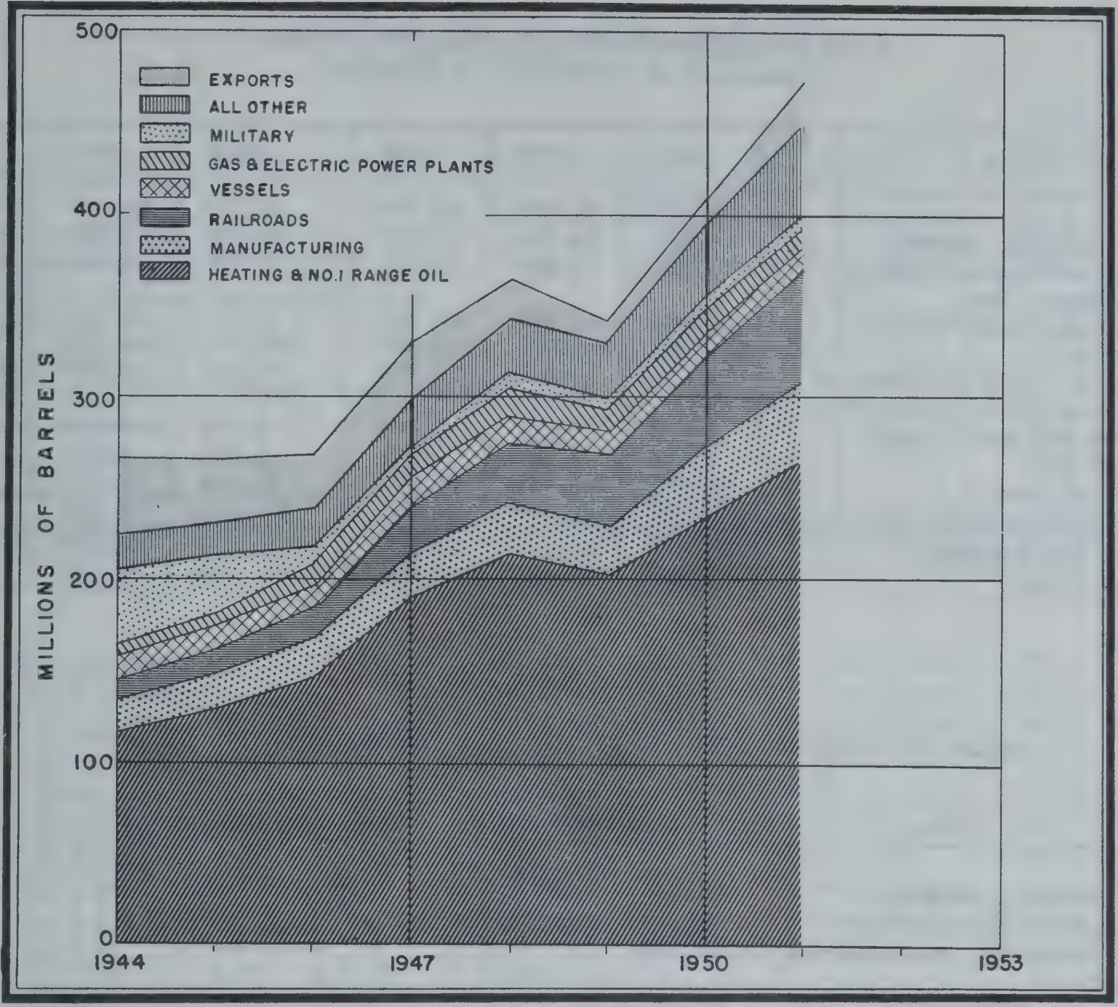

Figure 1.-Sales of distillate fuel oil by uses, 1944-51.

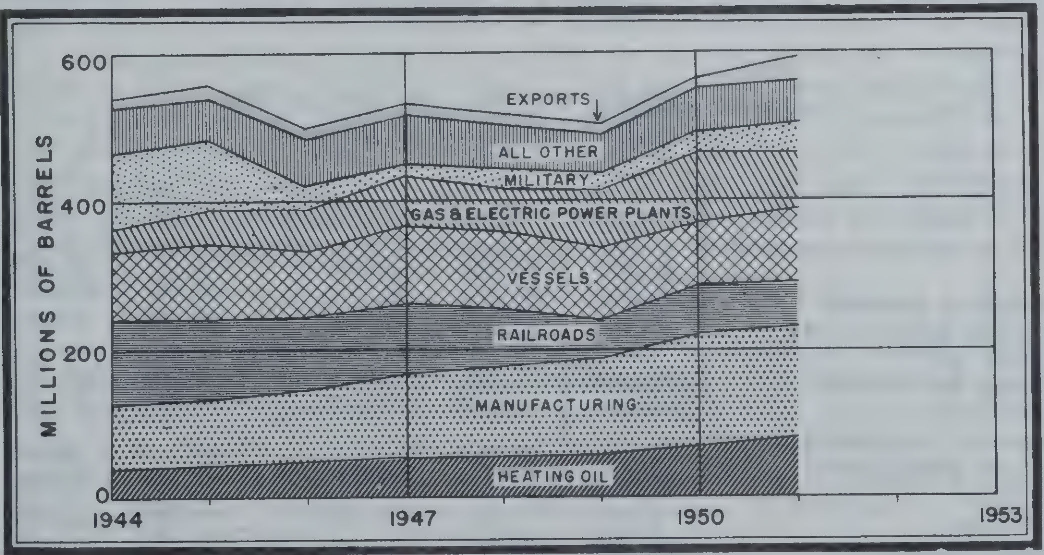

Figure 2.-Sales of residual fuel oil by uses, 1944-51.

TABLE 1

SALES OF DISTILLATE FUEL OIL 1947-1951 BY USES
(Thousands of barrels of 42 gallons)

Uses	1947	1948	1949	1950	1951	Percent change
Railroads	23,619	31,006	38,604	48,703	59,962	23.1
Vessels (including tankers)	14,475	14,511	13,121	12,872	14,393	11.8
Gas and electric power plants	14,216	14,856	12,550	13,207	9,612	-27.2
Smelters, mines, and manufacturing industries	24,489	29,932	26,424	37,121	42,067	13.3
Heating oils	178,359	200,024	190,387	220,947	249,258	12.8
No. 1 fuel oil sold as range oil	11,632	13,534	12,279	14,793	16,224	9.7
Military uses (U. S. Army, Navy, Air Force and Coast Guard)	5,176	9,071	6,109	6,553	8,430	28.6
Oil Company fuel	2,191	3,625	4,151	5,692	8,811	54.8
Miscellaneous uses	23,857	25,414	25,571	35,418	40,151	13.4
Total United States	298,014	341,973	329,196	395,306	448,908	13.6
Exports and Shipments	29,877	21,293	12,295	1/ 12,653	22,674	79.2
Grand Total	327,891	363,266	341,491	1/ 407,959	471,582	15.6

1/ Revised.

TABLE 2

SALES OF DISTILLATE FUEL OIL BY USES ON A PERCENTAGE BASIS, 1947-1951

Uses	1947	1948	1949	1950	1951
Railroads	7.9	9.1	11.7	12.3	13.4
Vessels (including tankers)	4.9	4.2	4.0	3.3	3.2
Gas and electric power plants	4.8	4.3	3.8	3.3	2.1
Smelters, mines and manufacturing industries	8.2	8.7	8.0	9.4	9.4
Heating oils	59.9	58.5	57.8	55.9	55.5
No. 1 fuel oil sold as range oil	3.9	4.0	3.7	3.7	3.6
Military uses (U. S. Army, Navy, Air Force and Coast Guard)	1.7	2.7	1.9	1.7	1.9
Oil Company fuel	0.7	1.1	1.3	1.4	2.0
Miscellaneous uses	8.0	7.4	7.8	9.0	8.9
Total United States	100.0	100.0	100.0	100.0	100.0

TABLE 3

SALES OF RESIDUAL FUEL OIL 1947-1951 BY USES
(Thousands of barrels of 42 gallons)

Uses	1947	1948	1949	1950	1951	Percent change
Railroads	97,500	89,588	63,467	60,878	54,998	-9.7
Vessels (including tankers)	101,900	95,763	89,362	92,947	107,007	15.1
Gas and electric power plants	60,964	56,812	80,092	93,062	70,550	-24.2
Smelters, mines and manufacturing industries	115,108	117,780	122,633	148,111	157,279	6.2
Heating oils	56,402	58,639	60,414	72,716	76,164	4.7
Military uses (U. S. Army, Navy, Air Force and Coast Guard)	19,147	24,655	22,724	28,333	38,054	34.3
Oil Company fuel	62,649	56,637	51,667	53,263	54,056	1.5
Miscellaneous uses	6,859	6,623	4,574	4,898	5,280	7.8
Total United States	520,529	506,497	494,933	554,208	563,388	1.7
Exports and Shipments	10,623	13,011	12,641	1/ 16,228	29,058	79.[illegible]
Grand Total	531,152	519,508	507,574	1/ 570,436	592,446	3.[illegible]

1/ Revised.

TABLE 4

SALES OF RESIDUAL FUEL OIL BY USES ON A PERCENTAGE BASIS, 1947-1951

Uses	1947	1948	1949	1950	1951
Railroads	18.8	17.7	12.8	11.0	9.8
Vessels (including tankers)	19.6	18.9	18.1	16.8	19.0
Gas and electric power plants	11.7	11.2	16.2	16.8	12.5
Smelters, mines and manufacturing industries	22.1	23.3	24.8	26.7	27.9
Heating oils	10.8	11.5	12.2	13.1	13.5
Military uses (U. S. Army, Navy, Air Force and Coast Guard)	3.7	4.9	4.6	5.1	6.8
Oil Company fuel	12.0	11.2	10.4	9.6	9.6
Miscellaneous uses	1.3	1.3	.9	.9	.9
Total United States	100.0	100.0	100.0	100.0	100.0

Residual Fuel Oils.- Sales of residual fuel oils showed only a net over-all increase of 2 percent in 1951 over 1950, as deliveries to railroads and to the gas and electric public utilities were down sharply. The railroads, with their greatly expanded use of Diesel equipment, bought 10 percent less heavy fuel oil in 1951 than in 1950, which compares with a 4-percent drop in 1950 from 1949 requirements. Suppliers reported a 15-percent gain in sales of heavy fuel oils to vessels in 1951 against a 4-percent increase in 1950 over 1949. Vessels engaged in foreign trade were credited with purchases of 63,809,000 barrels of heavy fuel oil bunkers at American ports in 1951 compared with 50,815,000 in 1950--a gain of 26 percent--according to the records of the Bureau of the Census, United States Department of Commerce. The indicated demand for heavy fuel oils by vessels using coastal and inland waters increased from 42,132,000 barrels in 1950 to 43,198,000 in 1951.

The fact that gas and electric power companies turned strongly to other sources of energy in 1951, due largely to higher fuel oil prices, is reflected in a 24-percent decline in their purchases of residual fuel oils. This sharp drop in heavy fuel oil sales to the utilities in 1951 is in contrast to a substantial gain of 16 percent in 1950 over the 1949 total. The index of manufacturing, a tentative measure of the need for all fuels by heavy industries, rose from 209 in 1950 to 229 in 1951, so apparently higher prices for heavy fuel oil in contrast to practically staple prices for industrial grades of coal were the more important factor which limited sales of residual fuel oils to smelters, mines and manufacturing plants to a 6-percent gain in 1951 compared with a 21-percent increase in 1950 over 1949 requirements.

Considerably colder weather and an 8-percent increase in commercial burners in use were factors which brought about a 20-percent expansion in sales of heavy heating oils in 1950. There was a similar percentage gain in the number of commercial burners in use in 1951, but practically no change in the coldness of the weather as measured by degree days, so consequently sales of heavy grades of fuel oil for heating purposes showed only a nominal gain of 5 percent.

The nation's military services increased their purchases of Navy grade and other heavy fuel oils by 34 percent in 1951, the first full year of operations under current unsettled world conditions. This stepped-up demand in 1951 compares with a 25-percent gain in military requirements for heavy fuel oils in 1950, when a tense international situation had prevailed only during the second half of the year.

The relative quantity of heavy fuel oil, including some crude petroleum and acid sludge, consumed by oil companies in their field and refinery operations has had a tendency to decline in recent years, as the petroleum industry has turned more and more to natural gas, refinery gas and purchased electricity as sources of energy. Heavy grades of fuel oil used by oil companies increased by less than 2 percent in 1951 over 1950 requirements, compared with a 3 percent gain in 1950 over 1949, and the quantities represented about a tenth of the residual fuel oil total for both years.

Kerosine.- Sales of kerosine for various uses showed an increase of 4 percent in 1951 over the 1950 demand compared with a 15-percent gain in 1950 over 1949. The larger share of the kerosine is used in range burners for cooking and space heating. In 1950 the weather was considerably colder than in 1949, which was an important factor in the large increase in the kerosine demand. The fact that still greater requirements for heating, as measured by degree days, was not repeated in 1951, was probably the more important reason for the lower percent of gain in kerosine requirements for the year. Kerosine sold for range burner fuel was up by approximately 9 percent in 1951 over 1950 compared with a 20-percent gain in 1950 over the 1949 total. Some No. 1 fuel oil is also sold for range burner fuel and when this is added to the kerosine it shows a 9-percent increase in range oil requirements for 1951 against a 21-percent increment in 1950 over 1949.

Kerosine delivered for tractor fuel has steadily decreased in amount in recent years, as gasoline and liquefied petroleum gases sold for this purpose have gained in importance. Sales of kerosine for tractor fuel declined by about 3 percent in 1951 compared with a shrinkage of 15 percent in 1950 from 1949 requirements. Kerosine sold for various miscellaneous uses, such as lamp fuel, orchard heating, weed burning, asphalt heating, dust control, etc. declined by 5 percent in 1951 against a 9-percent gain in 1950 over 1949.

TABLE 5 SALES OF KEROSINE AND RANGE OIL 1947-1951
(Thousands of barrels of 42 gallons)

Uses	1947	1948	1949	1950	1951	Percent change
Kerosine sold as range oil	62,482	70,629	66,244	79,869	86,623	8.5
Tractor fuel	8,209	6,176	4,840	4,130	4,025	-2.5
All other uses	32,012	35,682	31,577	34,285	32,580	-5.0
Total United States	102,703	112,487	102,661	118,284	123,228	4.2
Exports and Shipments	7,252	3,495	2,533	1/2,078	6,818	228.1
Grand Total Kerosine	109,955	115,982	105,194	1/120,362	130,046	8.0
Kerosine sold as range oil	62,482	70,629	66,244	79,869	86,623	8.5
No. 1 fuel oil sold as range oil	11,632	13,534	12,279	14,793	16,224	9.7
Total Fuel Sold As Range Oil	74,114	84,163	78,523	94,662	102,847	8.6

1/ Revised.

TABLE 6

SALES OF DISTILLATE AND RESIDUAL FUEL OILS IN 1951
(Thousands of barrels of 42 gallons)

To Railroads

States by districts	Distillate fuels				Residual fuel	
	Diesel fuel	Other light	Total 1951	Total 1950	Total 1951	Total 1950
District 1						
Connecticut	691	--	691	685	117	100
Delaware	10	45	55	69	--	--
District of Columbia	304	12	316	320	--	--
Florida	1,150	196	1,346	1,053	504	670
Georgia	1,537	79	1,616	1,213	42	8
Maine	310	3	313	298	4	19
Maryland	812	65	877	596	41	46
Massachusetts	935	97	1,032	909	96	95
New Hampshire	102	16	118	92	157	5
New Jersey	749	124	873	780	173	123
New York	2,835	236	3,071	2,417	205	248
North Carolina	1,529	39	1,568	1,066	11	10
Pennsylvania	3,257	1,181	4,438	3,647	169	396
Rhode Island	33	--	33	32	23	24
South Carolina	485	1	486	460	15	26
Vermont	59	4	63	43	--	--
Virginia	960	185	1,145	984	183	272
West Virginia	407	25	432	95	2	2
Total 1951	16,165	2,308	18,473	--	1,742	--
Total 1950	12,762	1,997	--	14,759	--	2,044
District 2						
Illinois	3,932	239	4,171	4,131	189	316
Indiana	1,178	78	1,256	795	9	19
Iowa	2,010	108	2,118	1,653	425	377
Kansas	2,571	150	2,721	2,264	4,030	2,967
Kentucky	521	61	582	498	4	20
Michigan	708	335	1,043	713	370	293
Minnesota	1,148	79	1,227	1,018	321	176
Missouri	1,531	538	2,069	1,189	403	985
Nebraska	728	38	766	680	119	116
North Dakota	288	3	291	278	153	252
Ohio	2,570	347	2,917	2,258	127	198
Oklahoma	992	28	1,020	851	2,381	3,075
South Dakota	264	14	278	237	6	60
Tennessee	1,515	28	1,543	1,276	104	149
Wisconsin	745	56	801	634	71	91
Total 1951	20,701	2,102	22,803	--	8,712	--
Total 1950	17,220	1,255	--	18,475	--	9,094
District 3						
Alabama	606	124	730	594	16	46
Arkansas	690	26	716	914	1,431	1,675
Louisiana	843	37	880	682	895	1,141
Mississippi	388	12	400	252	46	64
New Mexico	467	2	469	465	360	563
Texas	4,285	113	4,398	3,437	15,818	16,140
Total 1951	7,279	314	7,593	--	18,566	--
Total 1950	6,070	274	--	6,344	--	19,629
District 4						
Colorado	667	7	674	661	183	199
Idaho	285	11	296	222	95	89
Montana	1,259	13	1,272	1,040	4,239	3,554
Utah	1,013	6	1,019	994	1,653	1,750
Wyoming	877	20	897	833	1,624	1,571
Total 1951	4,101	57	4,158	--	7,794	--
Total 1950	3,672	78	--	3,750	--	7,163
District 5						
Arizona	155	--	155	56	1,060	1,287
California	3,957	16	3,973	3,135	9,904	12,509
Nevada	1,070	--	1,070	1,003	2,289	2,543
Oregon	829	5	834	499	3,802	4,660
Washington	902	1	903	682	1,129	1,949
Total 1951	6,913	22	6,935	--	18,184	--
Total 1950	5,360	15	--	5,375	--	22,948
Total U. S. Sales 1951	55,159	4,803	59,962	--	54,998	--
Total U. S. Sales 1950	45,084	3,619	--	48,703	--	60,878

TABLE 7

SALES OF DISTILLATE AND RESIDUAL FUEL OILS IN 1951
(Thousands of barrels of 42 gallons)

To Vessels (Including Tankers)

States by districts	Distillate fuels				Residual fuels			
	Diesel fuel	Other light	Total 1951	Total 1950	Heavy fuel	Diesel fuel	Total 1951	Total 1950
District 1								
Connecticut	6	--	6	6	18	--	18	23
Delaware	3	4	7	7	215	1	216	411
District of Columbia	5	--	5	4	16	--	16	22
Florida	245	40	285	273	1,342	9	1,351	846
Georgia	43	16	59	39	549	12	561	416
Maine	16	--	16	59	56	23	79	126
Maryland	494	6	500	476	5,498	287	5,785	4,958
Massachusetts	460	37	497	512	928	170	1,098	1,062
New Hampshire	--	--	--	2	--	2	2	--
New Jersey	1,092	35	1,127	1,213	5,844	685	6,529	6,544
New York	1,985	105	2,090	2,045	16,992	1,486	18,478	15,183
North Carolina	59	--	59	39	34	9	43	29
Pennsylvania	300	120	420	379	3,319	762	4,081	3,304
Rhode Island	11	9	20	32	82	29	111	180
South Carolina	50	1	51	48	441	11	452	360
Vermont	1	--	1	4	--	3	3	--
Virginia	412	8	420	299	7,582	14	7,596	3,460
West Virginia	4	1	5	12	2	--	2	3
Total 1951	5,186	382	5,568	--	42,918	3,503	46,421	--
Total 1950	5,095	354	--	5,449	34,817	2,110	--	36,927
District 2								
Illinois	254	4	258	319	63	113	176	254
Indiana	17	10	27	19	215	15	230	286
Iowa	7	14	21	16	1	--	1	4
Kansas	--	--	--	--	--	--	--	--
Kentucky	43	184	227	88	34	--	34	48
Michigan	19	12	31	28	145	54	199	228
Minnesota	45	1	46	1	58	25	83	104
Missouri	3	1	4	32	191	--	191	190
Nebraska	--	--	--	--	--	--	--	--
North Dakota	1	--	1	1	--	--	--	--
Ohio	37	97	134	159	132	2	134	136
Oklahoma	--	--	--	--	--	--	--	--
South Dakota	--	--	--	--	--	--	--	--
Tennessee	128	8	136	115	398	60	458	472
Wisconsin	3	3	6	2	1	1	2	1
Total 1951	557	334	891	--	1,238	270	1,508	--
Total 1950	606	174	--	780	1,359	364	--	1,723
District 3								
Alabama	174	12	186	203	1,316	11	1,327	1,020
Arkansas	115	1	116	126	--	71	71	110
Louisiana	1,650	11	1,661	1,761	6,928	652	7,580	7,514
Mississippi	82	10	92	86	47	1	48	124
New Mexico	--	--	--	--	--	--	--	--
Texas	2,093	592	2,685	2,138	24,018	757	24,775	23,921
Total 1951	4,114	626	4,740	--	32,309	1,492	33,801	--
Total 1950	4,090	224	--	4,314	32,162	527	--	32,689
District 4								
Colorado	--	--	--	--	--	--	--	--
Idaho	1	--	1	--	--	--	--	--
Montana	--	--	--	--	--	--	--	--
Utah	--	--	--	--	--	--	--	--
Wyoming	--	--	--	--	--	--	--	--
Total 1951	1	--	1	--	--	--	--	--
Total 1950	--	--	--	--	--	--	--	--
District 5								
Arizona	--	--	--	--	--	--	--	--
California	2,425	23	2,448	1,696	21,791	--	21,791	19,262
Nevada	--	--	--	--	--	--	--	--
Oregon	206	1	207	162	1,394	--	1,394	808
Washington	537	1	538	471	2,092	--	2,092	1,538
Total 1951	3,168	25	3,193	--	25,277	--	25,277	--
Total 1950	2,328	1	--	2,329	21,608	--	--	21,608
Total U. S. Sales 1951	13,026	1,367	14,393	--	101,742	5,265	107,007	--
Total U. S. Sales 1950	12,119	753	--	12,872	89,946	3,001	--	92,947

TABLE 8 SALES OF DISTILLATE AND RESIDUAL FUEL OILS IN 1951
(Thousands of barrels of 42 gallons)

To Gas and Electric Power Plants

States by districts	Distillate fuels				Residual fuel	
	Diesel fuel	Other light	Total 1951	Total 1950	Total 1951	Total 1950
District 1						
Connecticut	242	285	527	492	3,219	5,040
Delaware	3	2	5	23	34	20
District of Columbia	--	45	45	--	23	93
Florida	299	2	301	531	11,065	9,912
Georgia	172	66	238	235	890	871
Maine	31	22	53	104	920	1,221
Maryland	46	1	47	64	350	881
Massachusetts	53	687	740	1,108	10,090	11,333
New Hampshire	5	79	84	96	927	835
New Jersey	102	57	159	655	8,498	15,149
New York	434	583	1,017	1,533	7,020	21,724
North Carolina	64	135	199	249	123	86
Pennsylvania	159	279	438	396	1,170	3,590
Rhode Island	10	241	251	259	2,131	2,860
South Carolina	59	55	114	114	849	631
Vermont	47	1	48	60	44	63
Virginia	145	81	226	363	100	498
West Virginia	1	15	16	10	4	26
Total 1951	1,872	2,636	4,508	--	47,457	--
Total 1950	2,034	4,258	--	6,292	--	74,833
District 2						
Illinois	243	106	349	443	38	870
Indiana	116	163	279	444	31	112
Iowa	608	56	664	879	69	104
Kansas	336	26	362	363	440	395
Kentucky	159	5	164	21	8	12
Michigan	424	407	831	1,389	15	36
Minnesota	383	106	489	526	146	165
Missouri	244	154	398	485	420	251
Nebraska	199	36	235	266	84	107
North Dakota	51	3	54	117	3	2
Ohio	117	36	153	206	43	349
Oklahoma	106	--	106	224	38	213
South Dakota	179	1	180	229	12	19
Tennessee	22	--	22	9	110	49
Wisconsin	137	28	165	299	8	9
Total 1951	3,324	1,127	4,451	--	1,465	--
Total 1950	3,711	2,189	--	5,900	--	2,693
District 3						
Alabama	9	--	9	7	26	--
Arkansas	16	34	50	86	137	77
Louisiana	46	1	47	135	86	98
Mississippi	85	25	110	142	7	2
New Mexico	23	2	25	65	37	16
Texas	80	27	107	167	135	42
Total 1951	259	89	348	--	428	--
Total 1950	440	162	--	602	--	235
District 4						
Colorado	87	4	91	104	134	147
Idaho	3	--	3	8	2	--
Montana	1	--	1	5	38	10
Utah	79	8	87	75	202	4
Wyoming	27	3	30	12	3	10
Total 1951	197	15	212	--	379	--
Total 1950	172	32	--	204	--	171
District 5						
Arizona	14	--	14	25	24	6
California	28	1	29	90	16,731	10,973
Nevada	4	1	5	18	--	--
Oregon	23	--	23	33	2,694	2,889
Washington	22	--	22	43	1,372	1,262
Total 1951	91	2	93	--	20,821	--
Total 1950	207	2	--	209	--	15,130
Total United States Sales 1951	5,743	3,869	9,612	--	70,550	--
Total United States Sales 1950	6,564	6,643	--	13,207	--	93,062

TABLE 9

SALES OF DISTILLATE AND RESIDUAL FUEL OILS IN 1951
(Thousands of barrels of 42 gallons)

To Smelters, Mines, and Manufacturing Industries

States by districts	Distillate fuels				Residual fuel	
	Diesel fuel	Other light	Total 1951	Total 1950	Total 1951	Total 1950
District 1						
Connecticut	139	450	589	618	6,185	6,253
Delaware	38	36	74	90	1,300	1,608
District of Columbia	2	28	30	8	374	151
Florida	541	21	562	540	5,451	4,548
Georgia	252	58	310	353	3,228	2,412
Maine	41	59	100	88	1,874	1,838
Maryland	92	255	347	248	5,787	5,692
Massachusetts	71	608	679	604	9,780	9,351
New Hampshire	6	39	45	52	737	676
New Jersey	1,036	4,596	5,632	4,815	12,386	11,225
New York	963	4,763	5,726	5,013	9,212	7,889
North Carolina	317	235	552	423	565	429
Pennsylvania	1,017	4,857	5,874	4,640	22,851	20,674
Rhode Island	15	84	99	82	3,525	3,819
South Carolina	150	76	226	181	2,424	2,248
Vermont	22	85	107	118	178	234
Virginia	76	321	397	319	1,286	1,307
West Virginia	192	55	247	111	1,345	1,426
Total 1951	4,970	16,626	21,596	--	88,488	--
Total 1950	4,501	13,802	--	18,303	--	81,780
District 2						
Illinois	1,097	1,926	3,023	2,687	9,296	8,236
Indiana	937	1,149	2,086	1,562	10,013	9,033
Iowa	24	181	205	197	219	298
Kansas	191	85	276	316	187	265
Kentucky	194	34	228	355	446	660
Michigan	1,540	1,645	3,185	2,914	8,825	8,542
Minnesota	288	89	377	303	705	807
Missouri	281	460	741	797	1,455	1,607
Nebraska	89	31	120	122	42	82
North Dakota	16	43	59	65	12	17
Ohio	817	1,906	2,723	2,612	13,910	13,798
Oklahoma	67	22	89	85	222	286
South Dakota	22	1	23	26	87	104
Tennessee	225	176	401	405	177	243
Wisconsin	283	249	532	543	821	870
Total 1951	6,071	7,997	14,068	--	46,417	--
Total 1950	5,804	7,185	--	12,989	--	44,848
District 3						
Alabama	491	411	902	933	902	992
Arkansas	90	162	252	213	152	167
Louisiana	282	228	510	487	562	599
Mississippi	65	23	88	77	49	55
New Mexico	42	1	43	45	55	62
Texas	565	609	1,174	1,255	1,129	1,071
Total 1951	1,535	1,434	2,969	--	2,849	--
Total 1950	1,619	1,391	--	3,010	--	2,946
District 4						
Colorado	58	51	109	95	486	490
Idaho	167	50	217	160	292	297
Montana	17	19	36	11	118	142
Utah	92	27	119	103	873	833
Wyoming	57	17	74	67	95	121
Total 1951	391	164	555	--	1,864	--
Total 1950	332	104	--	436	--	1,883
District 5						
Arizona	134	5	139	112	55	134
California	1,205	207	1,412	1,195	9,393	8,834
Nevada	96	3	99	68	246	184
Oregon	593	67	660	546	2,257	2,123
Washington	505	64	569	462	5,710	5,379
Total 1951	2,533	346	2,879	--	17,661	--
Total 1950	2,012	371	--	2,383	--	16,654
Total U. S. Sales 1951	15,500	26,567	42,067	--	157,279	--
Total U. S. Sales 1950	14,268	22,853	--	37,121	--	148,111

TABLE 10

SALES OF DISTILLATE GRADES OF HEATING OILS IN 1951
(Thousands of barrels of 42 gallons)

Light Heating Oils

States by districts	No. 1	No. 2	No. 3	No. 4	Total 1951	Total 1950
District 1						
Connecticut	971	8,165	77	102	9,315	8,645
Delaware	181	1,154	--	--	1,335	1,046
District of Columbia	141	2,328	--	2	2,471	1,990
Florida	167	876	91	--	1,134	1,076
Georgia	222	589	86	1	898	723
Maine	433	2,753	--	1	3,187	2,738
Maryland	690	7,827	25	39	8,581	7,155
Massachusetts	1,120	21,287	274	8	22,689	17,932
New Hampshire	172	2,544	11	1	2,728	2,379
New Jersey	1,344	18,804	1,114	953	22,215	21,472
New York	2,423	37,091	1,210	718	41,442	38,483
North Carolina	410	1,275	712	--	2,397	2,001
Pennsylvania	1,744	17,020	937	95	19,796	15,984
Rhode Island	158	3,209	10	3	3,380	3,188
South Carolina	168	597	52	--	817	658
Vermont	72	815	8	1	896	847
Virginia	1,073	3,896	--	10	4,979	4,058
West Virginia	12	289	--	--	301	195
Total 1951	11,501	130,519	4,607	1,934	148,561	--
Total 1950	12,389	111,761	5,105	1,315	--	130,570
District 2						
Illinois	2,297	8,966	2,954	42	14,259	13,223
Indiana	1,630	3,003	973	21	5,627	4,682
Iowa	2,046	3,030	151	2	5,229	4,601
Kansas	583	585	25	4	1,197	843
Kentucky	153	586	10	--	749	604
Michigan	2,633	7,864	782	83	11,362	9,834
Minnesota	2,139	6,809	673	76	9,697	9,082
Missouri	956	2,559	393	7	3,915	3,768
Nebraska	759	1,064	291	6	2,120	2,028
North Dakota	261	895	52	2	1,210	1,055
Ohio	2,703	3,373	203	573	6,852	5,384
Oklahoma	32	225	9	--	266	178
South Dakota	506	729	64	3	1,302	1,053
Tennessee	133	551	9	--	693	665
Wisconsin	1,397	5,178	674	29	7,278	6,687
Total 1951	18,228	45,417	7,263	848	71,756	--
Total 1950	18,444	35,347	9,177	719	--	63,687
District 3						
Alabama	138	354	--	3	495	484
Arkansas	26	186	--	--	212	118
Louisiana	106	381	55	5	547	321
Mississippi	21	161	3	--	185	114
New Mexico	38	65	2	--	105	102
Texas	181	1,165	4	--	1,350	1,174
Total 1951	510	2,312	64	8	2,894	--
Total 1950	763	1,421	76	53	--	2,313
District 4						
Colorado	298	345	192	--	835	656
Idaho	672	480	152	7	1,311	982
Montana	286	264	208	--	758	660
Utah	190	150	248	52	640	523
Wyoming	61	179	49	3	292	257
Total 1951	1,507	1,418	849	62	3,836	--
Total 1950	1,413	997	587	81	--	3,078
District 5						
Arizona	198	--	258	--	456	454
California	1,860	--	3,005	--	4,865	5,113
Nevada	264	--	353	--	617	541
Oregon	2,573	--	3,104	--	5,677	5,375
Washington	5,288	--	5,308	--	10,596	9,816
Total 1951	10,183	--	12,028	--	22,211	--
Total 1950	10,949	--	10,350	--	--	21,299
Total U. S. Sales 1951	41,929	179,666	24,811	2,852	249,258	--
Total U. S. Sales 1950	43,958	149,526	25,295	2,168	--	220,947

TABLE 11 SALES OF RESIDUAL GRADES OF HEATING OILS IN 1951
(Thousands of barrels of 42 gallons)

Heavy Heating Oils

States by districts	No. 5	No. 6	Total 1951	Total 1950
District 1				
Connecticut	1,971	3,060	5,031	5,146
Delaware	117	115	232	230
District of Columbia	251	1,006	1,257	888
Florida	142	281	423	469
Georgia	185	257	442	532
Maine	66	194	260	287
Maryland	287	1,558	1,845	1,327
Massachusetts	1,715	5,891	7,606	7,731
New Hampshire	29	162	191	251
New Jersey	2,320	4,788	7,108	7,332
New York	2,789	12,666	15,455	14,638
North Carolina	32	44	76	43
Pennsylvania	1,574	2,243	3,817	3,924
Rhode Island	372	2,234	2,606	2,633
South Carolina	43	31	74	27
Vermont	7	62	69	84
Virginia	167	497	664	618
West Virginia	53	26	79	96
Total 1951	12,120	35,115	47,235	--
Total 1950	12,732	33,524	--	46,256
District 2				
Illinois	3,393	3,297	6,690	6,037
Indiana	524	551	1,075	1,045
Iowa	392	168	560	480
Kansas	477	199	676	691
Kentucky	25	96	121	150
Michigan	1,104	1,815	2,919	2,580
Minnesota	449	349	798	791
Missouri	1,710	644	2,354	1,729
Nebraska	149	52	201	224
North Dakota	4	28	32	6
Ohio	543	323	866	857
Oklahoma	110	48	158	190
South Dakota	18	71	89	67
Tennessee	58	174	232	183
Wisconsin	512	299	811	680
Total 1951	9,468	8,114	17,582	--
Total 1950	8,109	7,601	--	15,710
District 3				
Alabama	64	54	118	146
Arkansas	78	137	215	231
Louisiana	270	427	697	589
Mississippi	1	--	1	7
New Mexico	2	22	24	3
Texas	1,111	327	1,438	1,344
Total 1951	1,526	967	2,493	--
Total 1950	1,358	962	--	2,320
District 4				
Colorado	83	44	127	125
Idaho	365	10	375	132
Montana	51	78	129	134
Utah	108	111	219	122
Wyoming	37	3	40	38
Total 1951	644	246	890	--
Total 1950	326	225	--	551
District 5				
Arizona	5	--	5	11
California	2,049	1,187	3,236	3,279
Nevada	74	34	108	120
Oregon	1,404	177	1,581	1,505
Washington	2,261	773	3,034	2,964
Total 1951	5,793	2,171	7,964	--
Total 1950	5,878	2,001	--	7,879
Total U. S. Sales 1951	29,551	46,613	76,164	--
Total U. S. Sales 1950	28,403	44,313	--	72,716

TABLE 12

SALES OF DISTILLATE AND RESIDUAL FUEL OILS IN 1951
(Thousands of barrels of 42 gallons)

To Military (U. S. Army, Navy, Air Force, and Coast Guard

States by districts	Distillate fuels				Residual fuels			
	Diesel fuel	Other light	Total 1951	Total 1950	Navy grade	Other Residual	Total 1951	Total 1950
District 1								
Connecticut	14	5	19	144	47	172	219	236
Delaware	2	2	4	4	--	--	--	1
District of Columbia	42	--	42	25	--	11	11	2
Florida	117	154	271	368	529	373	902	296
Georgia	30	6	36	22	--	181	181	224
Maine	11	17	28	16	--	4	4	2
Maryland	49	87	136	124	41	873	914	328
Massachusetts	102	81	183	199	177	229	406	354
New Hampshire	1	2	3	19	31	280	311	104
New Jersey	3	10	13	10	120	37	157	4
New York	206	56	262	79	412	450	862	705
North Carolina	55	1	56	50	4	51	55	135
Pennsylvania	266	71	337	472	1,275	500	1,775	590
Rhode Island	151	69	220	318	317	823	1,140	928
South Carolina	4	1	5	5	--	137	137	136
Vermont	--	5	5	6	--	--	--	--
Virginia	625	312	937	1,033	2,202	5,733	7,935	6,587
West Virginia	3	1	4	13	--	--	--	--
Total 1951	1,681	880	2,561	--	5,155	9,854	15,009	--
Total 1950	1,999	908	--	2,907	2,278	8,354	--	10,632
District 2								
Illinois	8	26	34	52	--	88	88	100
Indiana	7	33	40	36	--	3	3	23
Iowa	3	--	3	6	--	79	79	38
Kansas	1	258	259	50	--	14	14	11
Kentucky	11	2	13	19	--	--	--	1
Michigan	10	113	123	132	1	48	49	37
Minnesota	--	--	--	27	--	--	--	12
Missouri	11	4	15	--	--	13	13	10
Nebraska	4	5	9	12	1	3	4	3
North Dakota	1	23	24	8	--	--	--	--
Ohio	33	1	34	34	6	61	67	19
Oklahoma	5	87	92	25	--	--	--	1
South Dakota	4	7	11	3	--	20	20	9
Tennessee	16	19	35	36	--	223	223	292
Wisconsin	--	5	5	4	--	23	23	--
Total 1951	114	583	697	--	8	575	583	--
Total 1950	91	353	--	444	1	555	--	556
District 3								
Alabama	7	--	7	13	--	15	15	11
Arkansas	10	1	11	3	--	3	3	--
Louisiana	354	1	355	78	223	249	472	606
Mississippi	12	--	12	21	--	--	--	--
New Mexico	1	45	46	13	--	7	7	7
Texas	884	443	1,327	664	1,622	1,471	3,093	2,097
Total 1951	1,268	490	1,758	--	1,845	1,745	3,590	--
Total 1950	707	85	--	792	649	2,072	--	2,721
District 4								
Colorado	--	--	--	3	--	--	--	3
Idaho	6	7	13	6	--	27	27	13
Montana	2	2	4	3	--	--	--	--
Utah	17	12	29	13	--	17	17	--
Wyoming	--	--	--	1	--	--	--	1
Total 1951	25	21	46	--	--	44	44	--
Total 1950	14	12	--	26	--	17	--	17
District 5								
Arizona	5	17	22	14	--	--	--	1
California	2,628	488	3,116	2,200	16,323	1,649	17,972	14,214
Nevada	4	4	8	8	--	4	4	14
Oregon	29	6	35	39	--	116	116	80
Washington	159	28	187	123	--	736	736	98
Total 1951	2,825	543	3,368	--	16,323	2,505	18,828	--
Total 1950	1,839	545	--	2,384	13,725	682	--	14,407
Total U. S. Sales 1951	5,913	2,517	8,430	--	23,331	14,723	38,054	--
Total U. S. Sales 1950	4,650	1,903	--	6,553	16,653	11,680	--	28,333

TABLE 13 CONSUMPTION OF DISTILLATE AND RESIDUAL FUELS IN 1951

For Oil Company Fuel

States by districts	Distillate fuels				Residual fuels			
	Diesel fuel	Other light	Total 1951	Total 1950	Residual fuel	Crude oil	Total 1951	Total 1950
District 1								
Connecticut	1	9	10	11	53	--	53	43
Delaware	--	--	--	--	106	--	106	103
District of Columbia	--	4	4	5	7	--	7	8
Florida	4	1	5	5	53	--	53	48
Georgia	3	1	4	2	123	--	123	128
Maine	1	5	6	7	30	--	30	31
Maryland	13	40	53	13	1,064	--	1,064	891
Massachusetts	17	17	34	37	754	30	784	765
New Hampshire	--	3	3	2	--	--	--	--
New Jersey	161	226	387	186	9,680	--	9,680	8,639
New York	1	301	302	294	1,417	17	1,434	1,423
North Carolina	2	3	5	5	21	--	21	7
Pennsylvania	35	1,295	1,330	933	8,618	--	8,618	8,520
Rhode Island	--	50	50	7	453	--	453	404
South Carolina	1	1	2	1	118	--	118	96
Vermont	--	3	3	3	--	--	--	--
Virginia	--	7	7	6	89	--	89	102
West Virginia	5	--	5	6	30	--	30	34
Total 1951	244	1,966	2,210	--	22,616	47	22,663	--
Total 1950	196	1,327	--	1,523	21,221	21	--	21,242
District 2								
Illinois	43	811	854	357	3,560	106	3,666	3,596
Indiana	2	1,253	1,255	976	5,388	75	5,463	5,220
Iowa	7	43	50	19	3	--	3	11
Kansas	21	21	42	33	1,719	42	1,761	1,552
Kentucky	4	2	6	7	390	--	390	352
Michigan	1	36	37	12	1,070	2	1,072	925
Minnesota	42	1,075	1,117	53	372	--	372	377
Missouri	5	2	7	3	431	66	497	563
Nebraska	--	4	4	4	16	1	17	18
North Dakota	5	8	13	--	--	--	--	--
Ohio	13	112	125	120	2,610	121	2,731	2,580
Oklahoma	7	142	149	103	970	117	1,087	1,009
South Dakota	12	16	28	31	5	--	5	12
Tennessee	3	6	9	5	--	--	--	--
Wisconsin	4	135	139	23	97	--	97	37
Total 1951	169	3,666	3,835	--	16,631	530	17,161	--
Total 1950	149	1,597	--	1,746	15,802	450	--	16,252
District 3								
Alabama	1	1	2	2	7	--	7	6
Arkansas	1	6	7	13	17	--	17	5
Louisiana	53	1	54	34	463	36	499	512
Mississippi	--	2	2	2	68	22	90	94
New Mexico	2	3	5	1	38	10	48	45
Texas	77	1,924	2,001	1,809	3,178	714	3,892	3,750
Total 1951	134	1,937	2,071	--	3,771	782	4,553	--
Total 1950	123	1,738	--	1,861	3,665	747	--	4,412
District 4								
Colorado	1	1	2	4	117	18	135	78
Idaho	2	--	2	1	80	--	80	85
Montana	2	2	4	1	375	38	413	338
Utah	5	26	31	2	1,981	13	1,994	2,050
Wyoming	17	361	378	335	1,414	64	1,478	1,263
Total 1951	27	390	417	--	3,967	133	4,100	--
Total 1950	37	306	--	343	3,791	23	--	3,814
District 5								
Arizona	--	1	1	1	--	--	--	--
California	190	48	238	194	4,317	755	5,072	7,048
Nevada	1	--	1	--	3	--	3	--
Oregon	6	--	6	5	248	--	248	234
Washington	25	7	32	19	256	--	256	261
Total 1951	222	56	278	--	4,824	755	5,579	--
Total 1950	199	20	--	219	6,976	567	--	7,543
Total U. S. Sales 1951	796	8,015	8,811	--	51,809	2,247	54,056	--
Total U. S. Sales 1950	704	4,988	--	5,692	51,455	1,808	--	53,263

TABLE 14

SALES OF DISTILLATE AND RESIDUAL FUELS IN 1951
(Thousands of barrels of 42 gallons)

Miscellaneous Uses: (trucks, dredges, road oils, sprays, etc.)

States by districts	Distillate fuels					Residual fuel	
	Diesel fuel	Other light	Tractor fuel	Total 1951	Total 1950	Total 1951	Total 1950
District 1							
Connecticut	47	244	1	292	130	46	4
Delaware	21	25	--	46	44	--	--
District of Columbia	33	8	23	64	78	--	24
Florida	1,133	103	132	1,368	727	573	220
Georgia	431	57	225	713	520	152	142
Maine	72	9	4	85	43	7	26
Maryland	308	20	5	333	279	28	45
Massachusetts	432	108	3	543	650	23	24
New Hampshire	26	2	--	28	23	1	2
New Jersey	757	583	2	1,342	838	244	76
New York	888	905	26	1,819	1,632	18	19
North Carolina	493	15	51	559	418	215	251
Pennsylvania	723	825	94	1,642	1,498	133	112
Rhode Island	37	2	--	39	37	41	43
South Carolina	264	29	147	440	322	76	128
Vermont	18	1	1	20	10	6	1
Virginia	312	576	53	941	685	184	39
West Virginia	192	25	1	218	208	2	--
Total 1951	6,187	3,537	768	10,492	--	1,749	--
Total 1950	4,587	2,789	766	--	8,142	--	1,156
District 2							
Illinois	831	1,458	121	2,410	2,106	114	108
Indiana	523	843	409	1,775	1,651	26	103
Iowa	233	39	441	713	708	9	9
Kansas	358	3	173	534	478	2	12
Kentucky	487	43	45	575	613	4	17
Michigan	495	1,413	64	1,972	1,879	294	67
Minnesota	289	9	187	485	369	6	--
Missouri	409	19	281	709	689	46	54
Nebraska	151	9	193	353	376	--	--
North Dakota	177	5	144	326	366	24	20
Ohio	608	395	67	1,070	914	139	67
Oklahoma	383	--	16	399	354	4	9
South Dakota	102	4	70	176	171	12	23
Tennessee	238	127	164	529	490	27	10
Wisconsin	231	561	50	842	739	28	24
Total 1951	5,515	4,928	2,425	12,868	--	735	--
Total 1950	4,643	4,654	2,606	--	11,903	--	523
District 3							
Alabama	311	31	147	489	426	6	50
Arkansas	309	31	439	779	831	25	8
Louisiana	859	9	217	1,085	1,035	162	162
Mississippi	450	2	153	605	565	16	2
New Mexico	176	12	79	267	246	1	--
Texas	1,945	499	172	2,616	2,055	184	195
Total 1951	4,050	584	1,207	5,841	--	394	--
Total 1950	3,231	632	1,295	--	5,158	--	417
District 4							
Colorado	169	15	29	213	198	3	8
Idaho	349	35	10	394	336	74	13
Montana	474	151	39	664	647	21	44
Utah	362	10	8	380	263	21	8
Wyoming	171	15	25	211	215	12	20
Total 1951	1,525	226	111	1,862	--	131	--
Total 1950	1,280	236	143	--	1,659	--	93
District 5							
Arizona	433	13	--	446	358	13	9
California	5,519	431	--	5,950	5,589	1,785	2,278
Nevada	259	43	--	302	205	35	28
Oregon	934	158	--	1,092	1,066	123	130
Washington	1,063	235	--	1,298	1,338	315	264
Total 1951	8,208	880	--	9,088	--	2,271	--
Total 1950	7,592	964	--	--	8,556	--	2,709
Total U. S. Sales 1951	25,485	10,155	4,511	40,151	--	5,280	--
Total U. S. Sales 1950	21,333	9,275	4,810	--	35,418	--	4,898

TABLE 15 SALES OF DISTILLATE FUEL OILS IN 1950 AND 1951
(Thousands of barrels of 42 gallons)

Total Distillate Fuel Oil

States by districts	Diesel fuel		Other light 1/		Total	
	1951	1950	1951	1950	1951	1950
District 1						
Connecticut	1,140	1,251	10,637	9,816	11,777	11,067
Delaware	77	79	1,479	1,206	1,556	1,285
District of Columbia	386	363	2,596	2,070	2,982	2,433
Florida	3,489	2,833	1,854	1,815	5,343	4,648
Georgia	2,468	1,983	1,494	1,219	3,962	3,202
Maine	482	487	3,453	3,009	3,935	3,496
Maryland	1,814	1,510	9,084	7,471	10,898	8,981
Massachusetts	2,070	1,858	25,191	20,911	27,261	22,769
New Hampshire	140	134	2,962	2,631	3,102	2,765
New Jersey	3,900	3,751	28,398	26,770	32,298	30,521
New York	7,312	6,309	49,022	45,864	56,334	52,173
North Carolina	2,519	1,835	2,971	2,519	5,490	4,354
Pennsylvania	5,757	4,617	28,828	23,649	34,585	28,266
Rhode Island	257	271	4,003	3,845	4,260	4,116
South Carolina	1,013	882	1,189	972	2,202	1,854
Vermont	147	112	1,019	1,005	1,166	1,117
Virginia	2,530	2,511	6,626	5,344	9,156	7,855
West Virginia	804	388	425	263	1,229	651
Total	36,305	31,174	181,231	160,379	217,536	191,553
District 2						
Illinois	6,408	5,984	22,109	20,336	28,517	26,320
Indiana	2,780	2,112	10,425	8,664	13,205	10,776
Iowa	2,892	2,500	6,899	6,425	9,791	8,925
Kansas	3,478	3,056	2,074	1,471	5,552	4,527
Kentucky	1,419	1,400	1,334	874	2,753	2,274
Michigan	3,197	3,165	17,137	15,328	20,334	18,493
Minnesota	2,195	1,829	12,365	10,619	14,560	12,448
Missouri	2,484	2,196	6,200	5,619	8,684	7,815
Nebraska	1,171	1,134	2,658	2,573	3,829	3,707
North Dakota	539	484	1,487	1,455	2,026	1,939
Ohio	4,195	3,195	10,279	8,864	14,474	12,059
Oklahoma	1,560	1,439	663	489	2,223	1,928
South Dakota	583	553	1,550	1,340	2,133	1,893
Tennessee	2,147	1,838	1,281	1,224	3,428	3,062
Wisconsin	1,403	1,339	10,034	8,946	11,437	10,285
Total	36,451	32,224	106,495	94,227	142,946	126,451
District 3						
Alabama	1,599	1,575	1,247	1,117	2,846	2,692
Arkansas	1,231	1,245	1,013	1,169	2,244	2,414
Louisiana	4,087	3,676	1,137	943	5,224	4,619
Mississippi	1,082	910	425	361	1,507	1,271
New Mexico	711	711	261	239	972	950
Texas	9,929	8,163	6,254	4,627	16,183	12,790
Total	18,639	16,280	10,337	8,456	28,976	24,736
District 4						
Colorado	982	946	1,054	885	2,036	1,831
Idaho	813	658	1,478	1,112	2,291	1,770
Montana	1,755	1,437	1,096	1,041	2,851	2,478
Utah	1,568	1,400	766	601	2,334	2,001
Wyoming	1,149	1,066	744	666	1,893	1,732
Total	6,267	5,507	5,138	4,305	11,405	9,812
District 5						
Arizona	741	548	492	472	1,233	1,020
California	15,952	12,907	6,079	6,305	22,031	19,212
Nevada	1,434	1,258	668	585	2,102	1,843
Oregon	2,620	2,105	5,914	5,620	8,534	7,725
Washington	3,213	2,719	10,932	10,235	14,145	12,954
Total	23,960	19,537	24,085	23,217	48,045	42,754
Total United States Sales	121,622	104,722	327,286	290,584	448,908	395,306

1/ Includes Grade No. 1 fuel oil sold as range oil.

TABLE 16

SALES OF RESIDUAL FUELS IN 1950 AND 1951
(Thousands of barrels of 42 gallons)

Total Residual Fuel Oil

States by districts	Residual		Crude oil		Total	
	1951	1950	1951	1950	1951	1950
District 1						
Connecticut	14,888	16,845	--	--	14,888	16,845
Delaware	1,888	2,373	--	--	1,888	2,373
District of Columbia	1,688	1,188	--	--	1,688	1,188
Florida	20,322	17,009	--	--	20,322	17,009
Georgia	5,619	4,733	--	--	5,619	4,733
Maine	3,178	3,550	--	--	3,178	3,550
Maryland	15,814	14,168	--	--	15,814	14,168
Massachusetts	29,853	30,710	30	5	29,883	30,715
New Hampshire	2,326	1,873	--	--	2,326	1,873
New Jersey	44,775	49,092	--	--	44,775	49,092
New York	52,667	61,828	17	1	52,684	61,829
North Carolina	1,109	990	--	--	1,109	990
Pennsylvania	42,614	41,110	--	--	42,614	41,110
Rhode Island	10,030	10,876	--	15	10,030	10,891
South Carolina	4,145	3,652	--	--	4,145	3,652
Vermont	300	382	--	--	300	382
Virginia	18,037	12,883	--	--	18,037	12,883
West Virginia	1,464	1,587	--	--	1,464	1,587
Total	270,717	274,849	47	21	270,764	274,870
District 2						
Illinois	20,151	19,409	106	108	20,257	19,517
Indiana	16,775	15,765	75	76	16,850	15,841
Iowa	1,365	1,315	--	6	1,365	1,321
Kansas	7,068	5,835	42	58	7,110	5,893
Kentucky	1,007	1,260	--	--	1,007	1,260
Michigan	13,741	12,708	2	--	13,743	12,708
Minnesota	2,431	2,432	--	--	2,431	2,432
Missouri	5,313	5,273	66	116	5,379	5,389
Nebraska	466	550	1	--	467	550
North Dakota	224	297	--	--	224	297
Ohio	17,896	17,997	121	7	18,017	18,004
Oklahoma	3,773	4,704	117	79	3,890	4,783
South Dakota	231	294	--	--	231	294
Tennessee	1,331	1,398	--	--	1,331	1,398
Wisconsin	1,861	1,712	--	--	1,861	1,712
Total	93,633	90,949	530	450	94,163	91,399
District 3						
Alabama	2,417	2,271	--	--	2,417	2,271
Arkansas	2,051	2,272	--	1	2,051	2,273
Louisiana	10,917	11,158	36	63	10,953	11,221
Mississippi	235	305	22	43	257	348
New Mexico	522	692	10	4	532	696
Texas	49,750	47,924	714	636	50,464	48,560
Total	65,892	64,622	782	747	66,674	65,369
District 4						
Colorado	1,050	1,050	18	--	1,068	1,050
Idaho	945	629	--	--	945	629
Montana	4,920	4,208	38	14	4,958	4,222
Utah	4,966	4,767	13	--	4,979	4,767
Wyoming	3,188	3,015	64	9	3,252	3,024
Total	15,069	13,669	133	23	15,202	13,692
District 5						
Arizona	1,157	1,448	--	--	1,157	1,448
California	85,129	77,830	755	567	85,884	78,397
Nevada	2,685	2,889	--	--	2,685	2,889
Oregon	12,215	12,429	--	--	12,215	12,429
Washington	14,644	13,715	--	--	14,644	13,715
Total	115,830	108,311	755	567	116,585	108,878
Total United States Sales	561,141	552,400	2,247	1,808	563,388	554,208

Note: Includes heavy diesel oil sales reported under vessels.

TABLE 17

SALES OF KEROSINE BY STATES AND USES, 1950-1951
(Thousands of barrels of 42 gallons)

Kerosine

States by districts	Sold as range oil		Tractor fuel		All other uses 1/		Total	
	1951	1950	1951	1950	1951	1950	1951	1950
District 1								
Connecticut	4,923	4,902	13	15	127	167	5,063	5,084
Delaware	634	625	7	1	49	29	690	655
District of Columbia	227	251	3	1	132	195	362	447
Florida	1,729	1,526	87	74	814	804	2,630	2,404
Georgia	1,810	1,702	140	179	625	584	2,575	2,465
Maine	2,965	2,950	18	18	314	215	3,297	3,183
Maryland	1,465	1,310	47	37	696	668	2,208	2,015
Massachusetts	12,615	12,687	34	44	789	496	13,438	13,227
New Hampshire	1,432	1,536	10	11	52	68	1,494	1,615
New Jersey	4,931	4,874	8	19	1,070	1,037	6,009	5,930
New York	9,884	9,709	69	72	1,001	954	10,954	10,735
North Carolina	4,363	3,769	165	241	2,120	1,884	6,648	5,894
Pennsylvania	2,627	2,521	137	126	1,397	1,415	4,161	4,062
Rhode Island	2,860	2,897	62	12	161	104	3,083	3,013
South Carolina	2,014	1,957	58	42	1,365	1,060	3,437	3,059
Vermont	831	809	11	3	67	63	909	875
Virginia	1,822	1,615	19	27	1,003	924	2,844	2,566
West Virginia	326	234	7	2	195	243	528	479
Total	57,458	55,874	895	924	11,977	10,910	70,330	67,708
District 2								
Illinois	3,777	3,182	351	357	1,453	1,967	5,581	5,506
Indiana	2,537	1,905	122	129	1,621	2,155	4,280	4,189
Iowa	1,714	1,342	411	402	923	1,066	3,048	2,810
Kansas	745	412	209	208	390	410	1,344	1,030
Kentucky	704	489	70	52	620	808	1,394	1,349
Michigan	2,917	2,387	150	191	1,862	1,986	4,929	4,564
Minnesota	1,544	1,385	83	90	596	503	2,223	1,978
Missouri	1,622	1,456	52	51	661	774	2,335	2,281
Nebraska	608	504	86	97	166	160	860	761
North Dakota	613	485	76	82	210	122	899	689
Ohio	1,660	1,554	61	74	634	704	2,355	2,332
Oklahoma	910	815	161	165	813	959	1,884	1,939
South Dakota	671	498	78	87	89	86	838	671
Tennessee	1,508	1,309	78	71	978	971	2,564	2,351
Wisconsin	1,650	1,172	186	191	781	671	2,617	2,034
Total	23,180	18,895	2,174	2,247	11,797	13,342	37,151	34,484
District 3								
Alabama	738	550	87	72	786	765	1,611	1,387
Arkansas	949	854	135	113	693	774	1,777	1,741
Louisiana	662	615	156	159	732	748	1,550	1,522
Mississippi	511	441	127	137	637	673	1,275	1,251
New Mexico	249	162	12	10	84	78	345	250
Texas	2,301	1,973	361	355	2,820	3,462	5,482	5,790
Total	5,410	4,595	878	846	5,752	6,500	12,040	11,941
District 4								
Colorado	187	149	41	53	43	41	271	243
Idaho	29	25	2	3	19	12	50	40
Montana	174	109	29	45	64	77	267	231
Utah	16	14	3	4	9	9	28	27
Wyoming	76	66	3	8	145	166	224	240
Total	482	363	78	113	280	305	840	781
District 5								
Arizona	2	6	--	--	47	49	49	55
California	74	116	--	--	2,334	2,755	2,408	2,871
Nevada	1	1	--	--	9	8	10	9
Oregon	10	12	--	--	172	193	182	205
Washington	6	7	--	--	212	223	218	230
Total	93	142	--	--	2,774	3,228	2,867	3,370
Total U. S. Sales	86,623	79,869	4,025	4,130	32,580	34,285	123,228	118,284

1/ Includes jet propulsion.

TABLE 18

SALES OF RANGE OIL BY STATES, 1950-1951
(Thousands of barrels of 42 gallons)

Range Oil

States by districts	Kerosine		Grade No. 1 fuel oil 1/		Total	
	1951	1950	1951	1950	1951	1950
District 1						
Connecticut	4,923	4,902	328	336	5,251	5,238
Delaware	634	625	30	2	664	627
District of Columbia	227	251	5	3	232	254
Florida	1,729	1,526	71	75	1,800	1,601
Georgia	1,810	1,702	88	95	1,898	1,797
Maine	2,965	2,950	147	143	3,112	3,093
Maryland	1,465	1,310	24	26	1,489	1,336
Massachusetts	12,615	12,687	864	818	13,479	13,505
New Hampshire	1,432	1,536	93	100	1,525	1,636
New Jersey	4,931	4,874	550	552	5,481	5,426
New York	9,884	9,709	605	677	10,489	10,386
North Carolina	4,363	3,769	95	103	4,458	3,872
Pennsylvania	2,627	2,521	310	317	2,937	2,838
Rhode Island	2,860	2,897	168	161	3,028	3,058
South Carolina	2,014	1,957	61	65	2,075	2,022
Vermont	831	809	23	26	854	835
Virginia	1,822	1,615	104	108	1,926	1,723
West Virginia	326	234	1	1	327	235
Total	57,458	55,874	3,567	3,608	61,025	59,482
District 2						
Illinois	3,777	3,182	3,159	3,002	6,936	6,184
Indiana	2,537	1,905	860	611	3,397	2,516
Iowa	1,714	1,342	788	846	2,502	2,188
Kansas	745	412	161	180	906	592
Kentucky	704	489	209	69	913	558
Michigan	2,917	2,387	1,750	1,592	4,667	3,979
Minnesota	1,544	1,385	1,122	1,069	2,666	2,454
Missouri	1,622	1,456	826	852	2,448	2,308
Nebraska	608	504	222	219	830	723
North Dakota	613	485	48	49	661	534
Ohio	1,660	1,554	466	372	2,126	1,926
Oklahoma	910	815	102	108	1,012	923
South Dakota	671	498	135	143	806	641
Tennessee	1,508	1,309	60	61	1,568	1,370
Wisconsin	1,650	1,172	1,669	1,354	3,319	2,526
Total	23,180	18,895	11,577	10,527	34,757	29,422
District 3						
Alabama	738	550	26	30	764	580
Arkansas	949	854	101	110	1,050	964
Louisiana	662	615	85	86	747	701
Mississippi	511	441	13	12	524	453
New Mexico	249	162	12	13	261	175
Texas	2,301	1,973	525	91	2,826	2,064
Total	5,410	4,595	762	342	6,172	4,937
District 4						
Colorado	187	149	112	110	299	259
Idaho	29	25	54	55	83	80
Montana	174	109	112	111	286	220
Utah	16	14	29	28	45	42
Wyoming	76	66	11	12	87	78
Total	482	363	318	316	800	679
District 5						
Arizona	2	6	--	--	2	6
California	74	116	--	--	74	116
Nevada	1	1	--	--	1	1
Oregon	10	12	--	--	10	12
Washington	6	7	--	--	6	7
Total	93	142	--	--	93	142
Total U. S. Sales	86,623	79,869	16,224	14,793	102,847	94,662

1/ Included in distillate fuel oil totals Table 15.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

Secretary
OSCAR L. CHAPMAN

Director
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MINERAL MARKET REPORTS
M. M. S. NO. 2093

FINAL ANNUAL FIGURES – PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

PRODUCTION OF ROLLED ZINC IN 1951

Production of rolled zinc from slab zinc and purchased scrap in 1951 was 66,088 short tons valued at $33,723,333 compared with 70,075 tons valued at $28,368,498 in 1950, a drop of 6 percent in quantity but a gain of 19 percent in value, according to the Bureau of Mines, United States Department of the Interior. The average price of rolled zinc produced rose from $0.202 in 1950 to $0.255 in 1951.

Output of strip and ribbon zinc declined 9 percent to 44,713 tons and sheet zinc not over 0.1 inch thick dropped 5 percent to 17,535 tons. Foil, rod and wire production was 1,629 tons compared with 1,546 tons in 1950, and boiler plate and sheets over 0.1 inch thick likewise gained during 1951 when output was 2,211 tons compared with 926 tons. Of the 66,088 tons of rolled zinc produced, 68 percent was in the form of strip and ribbon zinc and 27 percent was sheet zinc not over 0.1 inch thick.

During 1951 zinc rolling mills reported the consumption of 64,085 tons of slab zinc and 3,799 tons of purchased zinc scrap compared with 68,444 tons of slab zinc and 4,516 tons of purchased scrap in 1950. In addition, 11,627 tons of strip and ribbon zinc were remelted and rerolled from scrap originating in fabricating plants operating in connection with zinc rolling mills.

The following grades of slab zinc were used:

	Short tons	
	1950	1951
Special High Grade	7,087	10,465
Regular High Grade	21,588	26,451
Intermediate	19,583	7,790
Brass Special	16,059	17,137
Select	50	165
Prime Western	4,077	2,077
	68,444	64,085

Inventories of slab zinc on hand at rolling mills were 3,190 tons at the beginning and 3,538 tons at the end of 1951. Stocks of rolled zinc were 2,006 tons on December 31, 1951 compared with 1,411 tons (revised figure) on the same date in 1950.

Prepared August 8, 1952, by O. M. Bishop and Esther B. Miller, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Rolled zinc produced and quantity available for consumption in the United States, 1950-51

	1950			1951		
	Short tons	Value		Short tons	Value	
		Total	Average per pound		Total	Average per pound
Production:						
Sheet zinc not over 0.1 inch thick----	18,436	$8,305,695	$0.239	17,535	$10,536,341	$0.300
Boiler plate and sheets over 0.1 inch thick--------	926	377,778	.204	2,211	1,112,648	.252
Strip and ribbon zinc 1/-----------	49,167	18,335,444	.186	44,713	21,057,114	.236
Foil, rod, and wire	1,546	849,581	.275	1,629	1,014,227	.311
Total rolled zinc-	70,075	28,368,498	.202	66,088	33,720,330	.255
Imports------------	211	92,862	.220	149	84,406	.282
Exports------------	3,290	1,496,158	.277	4,868	3,126,189	.321
Available for consumption-------	67,652	----------	----	60,774	-----------	----
Value of slab zinc (all grades)------	------	----------	.142	------	-----------	.182
Value added by rolling-----------	------	----------	.060	------	-----------	.073

1/ Figures represent net production. In addition, 13,841 tons of strip and ribbon zinc in 1950 and 11,627 tons in 1951 were rerolled from scrap originating in fabricating plants in connection with zinc rolling mills.

Interior-Duplicating Section-Washington, D. C.

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MINERAL MARKET REPORT
MMS NO. 2094

FELDSPAR PRODUCTION DECREASED IN 1951

General Summary

Crude feldspar production in 1951 decreased 2 percent in tonnage but increased 10 percent in value over 1950, according to reports by producers to the Bureau of Mines, United States Department of the Interior. Ground feldspar increased 2 percent in quantity and 9 percent in value. The fact that ground tonnage increased while crude tonnage decreased is accounted for by the reduction of inventories. The quantity of ground feldspar sales shipped to the pottery industry increased 17 percent, but the enamel industry decreased 34 percent, and the glass industry 7 percent in 1951 over 1950. The ability of the pottery industry to keep pace with the demand augmented by post-war expansion, made itself felt in the 1950 production to such an extent, that the uptrend carried through 1951. The whiteware and sanitary ware divisions of the pottery industry as well as high-tension electrical insulators accounted for the greater part of the increase.

Certain restrictions in the use of steel and other materials, for example cobalt, imposed in emergency regulations, caused a decided drop in enamel production. These were reflected in a proportional decrease in the consumption of feldspar. The automotive industry's inability to procure steel automatically lessened the demand for flat glass, a large consumer of feldspar. The glass container producers' use of substitutes such as aplite, nepheline syenite and blast furnace slag, curtailed the demand for feldspar. Imports of crude feldspar from Canada increased 38 percent in 1951 compared to 1950.

DOMESTIC PRODUCTION

Crude Feldspar.- Production of crude feldspar (400,439 long tons) in 1951 decreased 2 percent under 1950 and the total value increased 10 percent. The average value per ton was $7.03, compared with $6.27 in 1950. Eleven States reported production in 1951 the same as in 1950.

In comparison with output in 1950, the following large producing States showed decreases: Colorado, New Hampshire and North Carolina. All other States showed increases.

Prepared by B. L. Gunsallus and F. P. Uswald, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division.

The principal producer was North Carolina with 166,361 long tons (42 percent of the total), Colorado was second with 50,451 long tons (13 percent of the total), and South Dakota third with 48,559 long tons (12 percent of the total).

Crude feldspar sold or used by producers in the United States, 1949-51, by States

State	1949		1950		1951	
	Long tons	Value	Long tons	Value	Long tons	Value
Colorado........	60,966	$ 341,049	59,457	$ 329,120	50,451	$ 283,153
Connecticut.....	12,659	95,044	13,580	101,851	13,811	107,083
Maine...........	18,286	130,275	17,487	124,821	19,273	154,695
North Carolina...	160,916	973,431	183,027	1,107,061	166,361	1,230,404
South Dakota.....	32,272	156,548	43,875	249,176	48,559	290,520
Virginia........	33,936	234,442	26,879	188,153	30,979	232,099
Wyoming..........	(1/)	(1/)	--------	----------	--------	----------
Undistributed 2/.	50,343	347,652	63,620	458,208	71,005	517,633
Total.......	369,378	$2,278,441	407,925	$2,558,390	400,439	$2,815,587

1/ Included with "Undistributed".
2/ Includes Arizona, California, Georgia, New Hampshire, New York (1949), Texas and Wyoming (1949).

Ground Feldspar.- Sales of ground feldspar by merchant mills in 1951 reached 454,615 short tons, an increase of 2 percent over 1950 but lower than in the years 1947 and 1948. The total value increased 9 percent over 1950 and the average selling price per ton was $15.25, an increase of 7 percent. The number of producing States was 14, the same as in 1950.

Ground feldspar sold by merchant mills 1/ in the United States, 1949-51 by States

States	1949			1950			1951		
	Active mills	Short tons	Value	Active mills	Short tons	Value	Active mills	Short tons	Value
Colorado	2	69,294	$ 727,989	2	62,379	$ 663,712	2/	2/	2/
Connecticut	(2)	21,572	437,030	(2)	25,532	510,501	(2)	25,740	$ 528,246
New Jersey	(1)			(1)			(1)		
Georgia	2/	2/	2/	2/	2/	2/	(1)	47,755	668,347
Virginia	2/	2/	2/	2/	2/	2/	(2)		
Maine	3	16,742	295,227	3	19,938	352,809	3	20,504	376,258
New Hampshire	2/	2/	2/	2/	2/	2/	(2)	34,149	716,660
New York	2/	2/	2/	2/	2/	2/	(1)		
North Carolina	(4)	159,768	2,203,604	(3)	200,373	2,526,268	(3)	197,704	2,886,655
Tennessee	(1)			(1)			(1)		
Undistributed 2/	14	119,331	1,945,251	11	137,801	2,290,329	7	128,763	1,756,712
Total	27	386,707	5,609,101	23	446,523	6,343,619	23	454,615	6,932,878

1/ Excludes potters and others who grind for consumption in their own plants.
2/ Includes (number of active mills in parenthesis) Arizona (1), California (1), Colorado (2 in 1951), Georgia (1 in 1949-50), Illinois (1), New Hampshire (3 in 1949, 2 in 1950), New York (3 in 1949, 1 in 1950), South Dakota (2), and Virginia (2 in 1949-50).

CONSUMPTION AND USES

Crude Feldspar.- Many of the merchant grinders also mine feldspar, either themselves or through affiliated firms. A large part of their supplies of crude feldspar, however, is obtained from small operators who sell their products principally to the merchant mills. The tonnage of feldspar and feldspathic rock treated in flotation plants is increasing.

Most of the consumers of feldspar buy material already ground, sized and ready for use in their products. Some pottery, enamel and soap manufacturers, however, purchase all or part of their requirements in crude form and crush and grind it to their own specifications in their own mills. Some Canadian crude feldspar is purchased directly by consumers in this country.

Ground Feldspar.- The glass, pottery and enamel industries consumed 99 percent of all ground feldspar in 1951 compared with a like amount in 1950 and 1949. In 1951 glass accounted for 43 percent; pottery, 51 percent; enamel, 5 percent; and the remaining 1 percent was consumed in other industries, including soaps and abrasives. Tonnage shipped to the pottery industry increased 17 percent but decreased 34 percent to the enamel trade and 7 percent to the glass manufacturers. Shipments to all other branches of industry using ground feldspar decreased about [illegible] percent in 1951.

Ground feldspar sold by merchant mills in the United States, 1949-51, by uses

Use	1949		1950		1951	
	Short tons	Percent of total	Short tons	Percent of total	Short tons	Percent of total
Ceramic:						
Glass	199,852	51.7	212,481	47.6	197,483	43.4
Pottery	158,218	40.9	197,817	44.3	231,725	51.0
Enamel	25,351	6.6	33,037	7.4	21,778	4.8
Other ceramic uses	30	----	-------	----	-------	----
Soaps and abrasives	3,142	.8	3,028	.7	2,832	0.6
Other uses	114	----	160	----	797	0.2
Total	386,707	100.0	446,523	100.0	454,615	100.0

The percentage of consumption by States in 1951 was as follows; the comparable 1950 figure being shown in parenthesis: Ohio, 15 percent (15 percent); Pennsylvania, 13 percent (13 percent); Illinois, 13 percent (13 percent); New Jersey, 12 percent (12 percent); West Virginia, 8 percent (8 percent); and New York, 7 percent (5 percent).

The only large consuming States which showed a decrease in shipments from merchant mills in 1951 compared with 1950 were Illinois and Indiana. For the most part, shipments made from all States held their own or increased in 1951 compared with 1950.

NEPHELINE SYENITE

Domestic deposits of nepheline syenite have not been used successfully. All nepheline syenite used in the United States in commercial quantities originated from the mines of American Nepheline, Ltd., Lakefield, Ontario, Canada.

APLITE

The tonnage of aplite produced in 1951 as well as the value showed a slight decrease over both 1949 and 1950. The only producers of aplite are the Dominion Minerals, Inc., Piney River, Virginia and Carolina Mineral Company, Inc., Kona, North Carolina. The operations are in Amherst and Nelson Counties, Virginia, near Piney River.

FOREIGN TRADE

Feldspar.- Imports for consumption of crude feldspar in 1951 totaled 17,128 long tons valued at $146,565. Compared with 1950 there was a 38 percent increase in tonnage and 74 percent increase in value. This is the largest tonnage of crude feldspar imported since 1948.

According to reports by the merchant grinders to the Bureau of Mines, the ground feldspar exported from the United States, in 1951 totaled 2,406 short tons, a drop of 41 percent below 1950. Countries of destination were Mexico, Canada, and England.

Nepheline Syenite.- Imports of crude nepheline syenite decreased 97 percent from 1950. Imports of ground nepheline syenite on the other hand increased 21 percent. The average value per ton (foreign market value) of ground nepheline syenite imported was $14.23 in 1951; Canada was the sole supplier of both crude and ground material to the United States.

WORLD REVIEW

The estimated world production of feldspar in 1951, as shown in the accompanying table, was 725,000 metric tons, an increase of 4 percent compared with 1950. The output of China and U.S.S.R., for which no data are available, is not included in the total.

The production of feldspar in the United States decreased as well as some other world production districts. Countries showing increases were Argentina, Canada, France, Italy, Japan and Norway. The ratio of United States output to estimated world output in 1951 was 56 percent compared with 59 percent in 1950.

World production of feldspar by countries 1/, 1947-51, in metric tons
(Compiled by Helen L. Hunt)

Country 1/	1947	1948	1949	1950	1951
Argentina (shipments)	5,000	(2)	(2)	(2)	(2)
Australia 3/	8,566	9,767	10,902	4/ 13,276	14,328
Austria	951	4/ 1,106	1,912	3,802	3,751
Brazil	(2)	189	11,111	5/ 12,000	(2)
Canada (shipments)	32,753	49,760	33,518	4/ 32,248	33,224
Chile	217	885	125	871	(2)
Eritrea	150	300	200	---------	---------
Finland	6,781	6,064	10,074	8,000	(2)
France	44,104	55,343	45,000	42,000	66,000
Germany, West	21,251	32,921	49,544	57,899	46,095
India	1,750	1,003	863	1,800	(2)
Israel	19	(2)	(2)	(2)	(2)
Italy	4/ 10,031	4/15,309	4/ 13,522	14,254	22,630
Japan	21,496	6/25,077	6/ 20,055	6/ 13,187	6/ 26,528
Kenya	36	10	20	---------	---------
Norway	22,140	33,117	4/ 27,482	4/ 23,695	24,000
Peru	29	210	300	---------	(2)
Portugal	1,137	1,560	1,240	(2)	(2)
Southern Rhodesia	---------	---------	---------	3,520	1,148
Spain (quarry) 7/	3,333	6,600	396	1,650	800
Sweden	37,953	38,687	38,959	(2)	(2)
Union of South Africa	1,676	4/ 2,574	4/ 3,549	4/ 6,001	3,343
United States (sold or used)	467,292	468,107	375,307	414,472	406,866
Uruguay	843	4,877	811	710	675
Total (estimate) 1/	700,000	4/770,000	4/660,000	4/700,000	725,000

1/ In addition to countries listed, feldspar is produced in China, Rumania, Czechoslovakia, and U.S.S.R., but data are not available, and no estimates are included in the total except for Rumania and Czechoslovakia.

2/ Data not available; estimate by author of chapter included in total.

3/ Includes some china stone.

4/ Revised figure.

5/ Estimate.

6/ In addition, the following quantities of aplite and other feldspathic rock were produced: 1948: 35,840 tons; 1949: 50,943 tons; 1950: 45,679 and 1951: 59,919 tons.

7/ There is some additional production of feldspar, but comparable figures are not available.

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MINERAL MARKET REPORTS
M. M. S. NO. 2096

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

ZINC INDUSTRY IN 1951

Domestic production of slab zinc totaled 930,290 short tons in 1951, 2 percent above the 1950 output and the greatest quantity in the peacetime history of the United States, according to the Bureau of Mines, United States Department of the Interior. Domestic mine production of 671,526 tons of recoverable zinc was the largest since 1944. Idaho continued to be the leading mine producer among the States, followed in order by Montana, New Jersey, Colorado, Oklahoma, Arizona and New Mexico. Imports of zinc in ore and concentrates increased 9 percent but imports of slab zinc declined 44 percent. Consumption of zinc was brought into balance with the available supply by restrictive orders issued by the National Production Authority. Stocks at primary and secondary smelters totaled 21,981 tons on December 31, an increase of 13,097 tons over beginning stocks but still seriously low. Consumers' inventories on December 31 were 22 percent below January 1 levels. Zinc prices were quoted generally at 17.50 cents per pound, East St. Louis, until October 2 when the Office of Price Stabilization permitted a 2-cent rise.

Government regulations. - National Production Authority Order M-15 issued December 1, 1950 limited civilian consumers of zinc and zinc metal products to an average quarterly consumption rate not to exceed 80 percent of their quarterly average as established in the six-month period ending June 30, 1950. The same order specified that inventories should not exceed a 45-day supply or a "practicable minimum working inventory," whichever was less. On June 15, 1951 Order M-15 was amended to limit quarterly consumption of Special High Grade zinc to 70 percent of that used in the basing period, and allowable inventories of zinc and zinc metal products were restricted to 30 days or the "practicable minimum working inventory," whichever was less.

On July 5 the National Production Authority issued a new Order M-9 which placed slab zinc under allocation effective August 1. Under this order no dealer or consumer might accept delivery of 20 short tons or more of slab zinc during any calendar month without an allocation authorization. Amendment 1 to this order, issued November 23, 1951, reduced allowable receipts without allocation authorization from 20 to 10 short tons in any calendar month. The effective date was January 1, 1952.

Prepared September 18, 1952 by O. M. Bishop and Esther B. Miller, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Production. - Mine production of recoverable zinc (including that recovered as zinc pigments and salts directly from ore) increased to 671,526 tons in 1951 or 8 percent above the 1950 total. This high output was achieved despite a 2-week shutdown of mines, mills and smelters caused by a labor strike in the Western States in late August and early September. The increased yield was attributed to the great demand for zinc generated by the expanding defense program. On a percentage basis the largest gains were recorded in the West Central States of Oklahoma, Kansas, Missouri and Arkansas where the output was 14 percent above 1950. Zinc output in the States East of the Mississippi River and the Western States increased 9 percent and 6 percent, respectively, during the year.

Total domestic production of slab zinc, including primary metal from domestic and foreign ores and redistilled secondary metal from scrap was 930,290 tons. Output of redistilled secondary slab zinc was 48,657 tons or 5 percent of the total and 27 percent lower than the 1950 production.

Labor strikes caused some production losses but did not impair output as seriously as in some years. The strike of mine, mill and smelter workers in the Western States from August 23 to September 6 curtailed output in that area. In Virginia zinc mine production was reduced because of a strike at the Austinville mine of the New Jersey Zinc Co. Bertha Mineral Division from April 1 to September 22. The Hanover mine and mill of the New Jersey Zinc Co. Empire Zinc Division closed by a strike October 17, 1950 was idle throughout 1951.

During 1951, 18 primary zinc-reduction plants were in operation, of which 9 operated with horizontal retorts exclusively, 4 with vertical retorts exclusively (1 electrothermic) and 5 with electrolytic methods.

Consumption and uses. - According to reports from approximately 700 plants, 933,971 tons of slab zinc were consumed in 1951, a decrease of 3 percent from the 1950 total of 967,134 tons. Included in the 1951 total were 4,505 tons of remelt zinc. Galvanizing continued to be the largest field of use during 1951, although the total consumed was 9 percent below last year's total. Zinc-base alloys, largely die castings, increased 2 percent over 1950 to establish a new record of 296,434 tons.

Stocks. - Inventories of slab zinc at producers' plants were 21,981 tons on December 31, 1951 compared with 8,884 tons at the beginning of the year. Stocks at primary plants totaled 21,344 tons and at secondary plants 637 tons. While these stocks were more than twice the dangerously low stocks at the end of 1950 they continued to be inadequate, as they were sufficient to meet consumers' demands for only about 8-1/2 days at the average daily rate of consumption in 1951.

Prices. - Ceiling prices were established for zinc on January 26, 1951 at the highest price (for each seller) at which sales were made between December 19, 1950 and January 25, 1951. Thus a number of ceiling prices were maintained. The bulk of zinc sales, however, were at 17.50 cents per pound, Prime Western grade slab zinc, East St. Louis. This price remained in effect until October 2, 1951 when the Office of Price Stabilization permitted a rise of 2 cents per pound. No further change in price occurred in 1951.

The official London price of £151 per long ton of zinc (equivalent to 18.86 cents per pound computed on the 279.75 cent base) established by the British Ministry of Supply of October 4, 1950 was in effect until April 1, 1951 when the Ministry increased the price to £160 (19.98 cents). The price was raised by £30 on July 14 to £190 (23.73 cents) at which level it remained for the remainder of the year.

Foreign trade. - Imports of zinc in ore and concentrates increased to 303,038 tons (total zinc content) in 1951, 9 percent above 1950 and the highest since 1945. Of the total zinc in ore imported, 47 percent came from Mexico, 32 percent from Canada, 10 percent from Peru, 3 percent from Bolivia, 2 percent each from Guatemala and Argentina, and 1 percent each from Spain, Australia and the Union of South Africa.

Imports of slab zinc declined to 87,983 tons or to 44 percent below the 1950 level. Canada supplied approximately 97 percent of the total; minor quantities were received from Norway, Mexico, Belgium, French Morocco and Netherlands.

Exports of slab zinc totaled 36,510 tons in 1951 compared with 12,917 tons in 1950. The United Kingdom received 55 percent of the total, India 13 percent, Brazil 11 percent, Canada 5 percent and Yugoslavia 3 percent. In addition, 3,090 tons of zinc contained in ore were exported to Canada.

Tariff. - The import duties of 3/4 cent per pound on zinc-bearing ores (zinc content) and 7/8 cent a pound on zinc in blocks, pigs or slabs and dust were reduced on June 6 to 6/10 cent a pound and 7/10 cent a pound, respectively. The tariff of 1-1/8 cent a pound on sheet zinc (plated) and 1 cent a pound on other sheet zinc remained unchanged throughout the year. Duties on zinc scrap, dross, and skimmings were suspended during 1951.

Table 1. - Mine production of recoverable zinc in the United States in 1950-1951, in short tons

State	1950	1951
Western States and Alaska:		
Alaska	6	1
Arizona	60,480	52,999
California	7,551	9,602
Colorado	45,776	55,714
Idaho	87,890	78,121
Montana	67,678	75,888
Nevada	21,606	17,443
New Mexico	29,263	45,419
Oregon	21	3
Texas	-	24
Utah	31,678	34,317
Washington	14,807	18,189
Total	366,756	387,720
West Central States:		
Arkansas	8	50
Kansas	27,176	28,904
Missouri	8,189	11,476
Oklahoma	46,739	53,450
Total	82,112	93,880
States East of the Mississippi River:		
Illinois	26,982	21,776
Kentucky	731	3,457
New Jersey	55,029	62,917
New York	38,321	40,051
Tennessee	35,326	38,639
Virginia	12,396	7,332
Wisconsin	5,722	15,754
Total	174,507	189,926
Total United States	623,375	671,526

Table 2. - Primary and redistilled secondary slab zinc produced in the United States, 1950-1951, in short tons

Year	Primary			Redistilled secondary	Total (excludes remelted)
	Domestic	Foreign	Total		
1950	588,291	1/ 255,176	843,467	66,970	910,437
1951	621,826	259,807	881,633	48,657	930,290

1/ Includes a small tonnage of foreign slab zinc further refined into high-grade metal in the United States.

Table 3. - Distilled and electrolytic zinc, primary and secondary, produced in the United States, 1950-1951, in short tons

A. - Classified according to method of reduction

Year	Electrolytic primary	Distilled primary	Redistilled secondary		Total
			At primary smelters	At secondary smelters	
1950............	342,085	501,382	28,411	38,559	910,437
1951............	336,087	545,546	16,251	32,406	930,290

B. - Classified according to grade

	Special High Grade	Regular High Grade	Intermediate	Brass Special	Selected	Prime Western	Total
1950............	271,678	192,075	21,571	46,730	4,021	374,362	910,437
1951............	281,571	175,499	20,734	60,511	13,494	378,481	930,290

Table 4. - Primary slab zinc produced in the United States, by States where smelter 1/, 1950-1951, in short tons

State	1950	1951
Arkansas....................................	20,688	21,776
Idaho..	2/ 53,922	2/ 54,468
Illinois..	3/ 108,301	3/ 108,544
Montana.....................................	2/ 216,104	2/ 208,482
Oklahoma...................................	145,117	161,247
Pennsylvania..............................	162,539	189,177
Other States 4/..........................	5/ 136,796	5/ 137,939
Total..	843,467	881,633

1/ Final-stage production; includes high-grade zinc refined from lower grades, but excludes lower grades consumed for this purpose.
2/ Produced by electrolytic process only.
3/ Produced by electrolytic and retort processes.
4/ Includes Missouri, Texas and West Virginia.
5/ Includes electrolytic zinc produced in Texas.

Table 5. - Consumption of slab zinc in the United States in 1950 and 1951, by industries, in short tons 1/

Industry and product	1950	1951
Galvanizing: 2/		
Sheet and strip	188,406	144,329
Wire and wire rope	47,317	51,792
Tubes and pipes	91,877	79,221
Fittings	15,948	21,186
Other	98,138	103,751
Total	441,686	400,279
Brass products:		
Sheet, strip, and plate	68,737	67,815
Rod and wire	43,413	46,056
Tube	17,385	15,927
Castings and billets	4,170	7,098
Copper-base ingots	4,081	5,743
Other copper-base products	1,587	653
Total	139,373	143,292
Zinc-base alloy:		
Die castings	285,022	282,812
Alloy dies and rod	2,929	11,135
Slush and sand castings	1,576	2,487
Total	289,527	296,434
Rolled zinc	68,444	64,085
Zinc oxide	18,187	18,223
Other uses:		
Wet batteries	1,527	1,749
Desilverizing lead	2,947	2,186
Light-metal alloys	1,356	3,132
Other 3/	4,087	4,591
Total	9,917	11,658
Total: All uses	4/ 967,134	4/ 933,971

1/ Based on a canvass of approximately 700 plants.
2/ Includes zinc used in electrogalvanizing and electroplating, but excludes sherardizing.
3/ Includes zinc used in making zinc dust, bronze powder, alloys, chemicals, castings and miscellaneous uses not elsewhere mentioned.
4/ Includes 2,035 tons of remelt zinc in 1950 and 4,505 tons in 1951.

Table 6. - Stocks of zinc on hand at zinc-reduction plants in the United States at end of year 1950-1951, in short tons

	1950	1951
At primary reduction plants...............	1/ 7,948	21,344
At secondary distilling plants............	1/ 936	637
Total..............................	8,884	21,981

1/ Revised figure.

Table 7. - Consumers' stocks of slab zinc at plants at the beginning and end of 1951, by industries, in short tons

Date	Galvanizers	Brass products 1/	Zinc-base alloys 2/	Zinc rolling mills	Oxide plants	Others	Total
Dec. 31, 1950......	3/36,296	3/8,466	3/14,644	3,190	3/383	3/1,227	3/,4/64,206
Dec. 31, 1951......	20,110	14,717	10,137	3,538	320	1,249	4/50,071

1/ Includes brass mills, brass ingot makers, and brass products.
2/ Includes producers of zinc-base die castings, zinc-alloy dies, and zinc-alloy rods.
3/ Revised figure.
4/ Stocks on Dec. 31, 1950 and 1951, exclude 629 (revised figure) and 410 tons, respectively, of remelt spelter.

Table 8. - Average price received by producers for zinc, 1950-1951, by grades, in cents per pound, and value of total output

	1950	1951
Special High Grade........................	14.30	18.8
Regular High Grade........................	14.16	18.5
Intermediate..............................	14.69	18.5
Brass Special.............................	14.47	18.2
Selected..................................	1/ 17.37	18.0
Prime Western.............................	14.11	17.9
Average All Grades........................	14.23	18.2
Value of Total Output.....................	$259,[illegible]10,000	$338,626,000

1/ Revised figure.

Table 9. - Imports and exports of zinc, 1950-1951
short tons 1/

	1950	1951
Imports (General 2/):		
Ore (zinc content)........................	3/ 278,573	303,038
Slab zinc.................................	155,974	87,983
Imports (for consumption 4/):		
Ore (zinc content)........................	3/ 237,564	198,373
Slab zinc.................................	3/ 155,332	87,983
Sheets....................................	211	149
Old, dross, and skimmings................	3/ 2,862	6,603
Zinc dust.................................	472	154
Exports:		
Ore, and dross (zinc content)............	7,352	7,703
Slab zinc.................................	12,917	36,510
Sheets, strips or other forms, n.e.s.	4,810	6,579
Zinc dust.................................	506	723

1/ Figures on imports and exports compiled from records of the U. S. Department of Commerce.

2/ Data include material imported for immediate consumption plus material entering country under bond.

3/ Revised figure.

4/ Data include material for which duty has been paid in the year noted irrespective of date of importation.

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MINERAL MARKET REPORT
MMS NO. ~~2093~~ 2097

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

COPPER IN 1951

In 1951 efforts of the Government and industry were directed toward meeting the expanded United States demand for copper, resulting chiefly from the accelerated defense program; in the absence of success in this endeavor the Government extended inventory, use and other controls, inaugurated in late 1950. Provision had to be made also for further expansion in consumption in 1952 when the defense program was expected to attain still higher levels.

Despite all efforts to increase supplies, the total copper made available for use in 1951 fell slightly below that in 1950. Mine output and production from old scrap were slightly higher than in 1950 but imports dropped 29 percent to the lowest level since 1947.

Mine production although 2 percent above 1950 was 20,000 to 25,000 tons less than what may be considered the maximum practicable tonnage under condition prevailing in that year chiefly owing to the widespread strike of mine, mill and smelter workers in late August and early September. The almost month-long strike at the American Smelting and Refining Company smelter at Garfield, Utah, in July, was another adverse production factor.

The crisis caused by the loss in mine and plant production led to the unprecedented release of 25,000 tons of copper from the United States strategic stockpile in August and a subsequent authorization, October 1, for release of an additional 30,000 tons. The stockpile was to be reimbursed in metal for these withdrawals.

Continuation of Government efforts to assure adequate supplies of copper and other materials for military requirements, and to prevent, insofar as possible, dislocation of the industrial economy, was made possible by extension of the Defense Production Act. Under this Act the Defense Minerals Administration in the Interior Department and its successor, the Defense Materials Procurement Agency, continued efforts to expand production. Copper production, however, does not lend itself to rapid expansion. To solve the immediate problem of filling expanding military and continuing large industrial requirements with static or reduced supplies the National Production Authority reinstituted the Controlled Materials Plan, used effectively in World War II, for copper, steel and aluminum, the three materials covered by that major war device of the earlier period. On July 13 the NPA announced that copper raw materials would be placed under complete allocation control, effective August 1.

Prepared by Helena M. Meyer, Archie J. McDermid and Gertrude N. Greenspoon, under the Supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Copper was one of the commodities for which ceiling prices were established by the General Ceiling Price Regulation, effective January 26. This order set maximum prices at not to exceed the highest prices received by individual producers between December 19, 1950 and January 25, 1951, inclusive. Primary producers in general had been selling electrolytic copper, delivered Connecticut Valley, at 24 1/2 cents a pound, and as a consequence that figure became their ceiling price. There were, however, companies whose ceiling pric were substantially in excess of the 24 1/2 cent figure. The quantities to whic higher ceilings applied were relatively small. The annual quoted price for copper in 1951 was reported as 24 1/2 cents a pound for electrolytic copper delivered Connecticut Valley and was higher than in any year since 1918.

World demand in 1951, partly because of expanded defense mobilization, was at a sharply accelerated rate and world prices soared. Trustworthy information on prices for copper sold outside the United States, however, is not available. Press statements have called attention to fantastically high prices prevailing in foreign countries. It is known that such prices were paid but there are no data to show that extremely high prices were paid for substantial quantities. There is little doubt, however, that the United States, because of ceiling price restrictions, contrasted with uncontrolled markets on European Continent, was at a disadvantage in seeking foreign copper. This condition offset in part the long-time advantage resulting from the desire of foreign countries to obtain United States dollars.

An agreement between the United States and Chilean Governments in May 1951, provided for the payment of an additional 3 cents a pound over the ceiling for Chilean copper sold in the United States. The agreement called for expansion in Chile's production, for Chile's discontinuance of abnormal trade in semi-processed copper, for the withholding by Chile of not in excess of 20 percent of production of American companies operating in Chile, and for Chile's prevention of the exportation of copper to countries of the Soviet bloc.

The Office of Price Stabilization announced that effective July 25, the ceiling price for copper refined in the United States from imported crude materials was 27 1/2 cents a pound delivered Connecticut Valley. The increased cost of foreign copper was not to be passed on to customers by the fabricators.

Trading in copper, lead, and zinc on the Commodity Exchange was terminated July 27, as a result of the restricting effects of the general price ceiling regulation, and upon virtual liquidation of outstanding contracts.

The 2-cent copper excise tax was suspended from April 1, 1951 to February 15, 1953, or to the termination of the National Emergency, whichever is first, by a law signed by the President in May.

Price changes for electrolytic copper in the United Kingdom in 1951 were: An increase of £ 8 per long ton to £ 210 (equivalent at $2.80 to 26.25 cents a pound) in April, a further increase of £ 24 to £ 234 (equivalent to 29.25 a pound) in May, and a drop of £ 7 to £ 227 (28.37 1/2 cents) in September.

The world shortage of copper in 1951 led to the placing of copper under international allocation (free world countries). Quotas were established by the International Materials Conference for the fourth quarter of 1951. The member countrie voluntarily accepted restrictions upon quantities to be consumed, but no attempt was made to regulate prices or to interfere otherwise with distribution or with competition for preferred sources of supply. Chile insisted on the right to withhold the copper retained by that Government under agreement with the United Stat State Department, already mentioned, from international agreement. Member countries agreed not to dispose of copper to countries in the Soviet bloc.

Inability to increase imports in 1951, or even to maintain them at 1950 levels was a major disappointment to defense officials trying to stretch supplies to meet expanding needs. Total imports, including scrap, for the year fell 29 percent, the unrefined classes - ores, matte, and blister - dropping 27 percent and the refined class 25 percent; scrap receipts fell 86 percent. All of the chief supplie in 1950 sent smaller quantites to the United States in 1951: Canada dropped 34 percent, Mexico 24 percent, Chile 8 percent, and Peru 65 percent. Receipts of unrefined copper from Northern Rhodesia were cut in half and the unusual imports of refined copper from Japan in 1950 were virtually discontinued in 1951.

Exports of refined copper in 1951 were substantially less than the relatively low rates of recent years.

A number of properties were certified in 1951 for Government assistance, under provisions of the Defense Production Act, for expansion of copper production at presently operating or idle mines or for maintenance of production that might be lost without such aid. The properties were to receive Government loans, Government purchase contracts, tax amortization benefits, or combinations of the three types of assistance. Some of the major projects at least parts of which were approved to the end of 1951 were the following:

Copper Cities, Arizona, Copper Cities Mining Co., subsidiary of Miami Copper Co., Government loan of $7,500,000 and Government purchase contract.

White Pine mine, Michigan, White Pine Copper Co., wholly-owned subsidiary of Copper Range Co., Government loan of $57,185,000, Government purchase contract and Certificate of Necessity permitting accelerated amortization.

Yerington mine, Nevada, Anaconda Copper Mining Co., Government purchase contract and Certificate of Necessity.

Silver Bell Unit, Arizona, American Smelting and Refining Co., Government purchase contract, and Certificate of Necessity.

Bisbee East Orebody (Lavender Pit), Arizona, Phelps Dodge Corp., Government purchase contract, and Certificate of Necessity.

Deep Ruth, Nevada, Kennecott Copper Corp., Certificate of Necessity.

Not yet approved but in an advanced stage of negotiation was the San Manuel project, Arizona, calling for all three types of assistance.

Table 1. – Salient statistics of the copper industry, in the United States, 1947-51, in short tons

	1947	1948	1949	1950	1951
Production:					
Primary–					
Mine (recoverable)	847,563	834,813	752,750	909,343	928,330
Smelter:					
Domestic	862,872	842,477	757,931	911,352	930,774
Foreign	81,821	82,973	101,702	97,177	105,863
Total	944,693	925,450	859,633	1,008,529	1,036,637
Refinery:					
Domestic	909,213	860,022	695,015	920,748	951,559
Foreign	250,757	247,424	232,912	319,086	255,429
Total	1,159,970	1,107,446	927,927	1,239,834	1,206,988
Secondary copper recovered from old scrap only	503,376	505,464	383,548	485,211	[1]496,000
Imports (unmanufactured) [2]	413,890	507,449	552,709	[3]690,389	489,376
Refined	149,478	249,124	275,811	[3]317,363	238,547
Exports of metallic copper [4]	196,999	207,022	195,990	192,339	166,274
Refined (ingots, bars)	147,642	142,598	137,827	144,561	133,305
Stocks at end of period:					
Refined	60,000	67,000	61,000	26,000	35,000
Blister, etc.	213,000	183,000	261,000	232,000	182,000
Consumption:					
New refined (apparent consumption)	1,286,000	1,214,000	1,072,000	1,447,000	1,303,000
Total refined (actual) [5]	1,463,294	1,420,584	1,129,686	1,424,434	[1]1,380,000
Price, average, cents per pound	[6] 20.9	21.7	19.7	20.8	[7] 24.2

[1] Preliminary. [2] Data are "general" imports; that is, they include copper imports for immediate consumption plus material entering country under bond. Comprises copper in ingots, plates, and bars, ores and concentrates, regulus, blister, and scrap. [3] Revised figure. [4] Total exports of copper, exclusive of ore, concentrates, composition metal, and unrefined copper. Exclusive also of "Other manufactures of copper," for which quantity figures are not recorded. [5] Includes estimate for chemical plants, foundries and miscellaneous plants. [6] Exclusive of bonus payments of the Office of Metals Reserve under Premium Price Plan, which expired June 30, 1947. [7] Exclusive of copper produced abroad and delivered in the United States.

Table 2. - Mine production of recoverable copper in the United States in 1951, by months 1/

Month	Short tons	Month	Short tons
January	80,459	August	67,979
February	73,123	September	69,024
March	83,233	October	81,077
April	82,473	November	76,917
May	83,778	December	78,939
June	75,891	Total	928,330
July	75,437		

1/ Includes Alaska. Monthly figures adjusted to final annual mine production total.

Table 3. - Mine production of recoverable copper in the United States, 1947-51, by States, in short tons

State	1947	1948	1949	1950	1951
Alaska	12	16	4	6	1
Arizona	366,218	375,121	359,010	403,301	415,870
California	2,407	481	649	646	921
Colorado	2,150	2,298	2,403	3,141	3,212
Idaho	1,640	1,624	1,438	2,107	2,160
Michigan	24,184	27,777	19,506	25,608	24,979
Missouri	1,760	2,370	3,670	2,982	2,422
Montana	57,900	58,252	56,611	54,478	57,406
Nevada	49,603	45,242	38,058	52,569	56,474
New Mexico	60,205	74,687	55,388	66,300	73,558
Oregon	14	2	20	19	11
Pennsylvania	(1)	(1)	(1)	(1)	(1)
Tennessee	1/ 12,686	1/ 14,248	1/ 13,449	1/ 14,497	1/ 16,140
Texas	6	23	24	2	1
Utah	266,533	227,007	197,245	278,630	271,086
Vermont	(1)	(1)	(1)	(1)	(1)
Virginia	5	-	-	-	-
Washington	2,240	5,665	5,275	5,057	4,089
	847,563	834,813	752,750	909,343	928,330

1/ Pennsylvania and Vermont included under Tennessee. Bureau of Mines not at liberty to publish separate figures.

Table 4. - Copper ore, old tailings, etc. sold or treated in the United States in 1951 with copper, gold and silver contents in terms of recovered metals

	Copper ore old tailings, etc. (short tons)	Copper (pounds)	Per-cent cu	Gold (fine ounces)	Silver (fine ounces)	Value and ag per to
Arizona-----	42,791,111	1/ 775,699,316	0.91	83,525	3,088,738	$0.13
California--	1,709	1/ 176,000	5.15	519	5,176	13.37
Colorado----	659	46,105	3.50	28	9,592	14.66
Idaho-------	29,942	361,584	.60	149	80,372	2.60
Michigan----	4,471,334	49,958,000	.56	-	-	-
Montana-----	1,169,143	1/ 95,757,052	4.10	2,904	1,553,708	1.29
Nevada------	6,630,269	1/ 111,993,100	.84	59,863	168,242	.34
New Mexico--	8,002,937	1/ 107,803,237	.67	2,324	113,509	.02
Oregon------	87	8,700	5.00	2	32	1.14
Utah--------	30,454,456	1/ 527,443,279	.87	391,400	3,181,269	.54
Washington---	567,594	8,128,800	.72	21,314	81,677	1.44
East of the Miss. (except Michigan)----	1,374,973	3/ 32,280,000	---	2,443	56,955	-----
	2/ 95,494,214	3/ 1,709,655,673	.90	564,471	8,339,270	.29

1/ Excludes copper recovered from precipitates as follows: Arizona, 34,172,315 pounds; California, 97,300 pounds; Montana, 9,836,739 pounds; Nevada, 482,600 pounds New Mexico, 37,765,686 pounds; Utah, 10,981,202 pounds.

2/ Includes ore from Washington classed as zinc-copper ore and copper, gold and silver recovered therefrom.

3/ Copper from magnetite-pyrite-chalcopyrite ore included with that from copper ore.

Table 5. - Copper ore, old tailings, etc. concentrated in the United States in 1951 with contents in terms of recovered copper

	Ore, old tailings, etc. (short tons)	Copper produced (pounds)	Copper from ore, etc. (percent)
Arizona------------	1/ 38,545,214	2/ 662,877,431	0.86
Idaho--------------	29,850	340,208	.57
Michigan-----------	4,471,334	49,958,000	.56
Montana------------	1,124,434	94,062,169	4.18
Nevada-------------	6,561,621	110,429,800	.84
New Mexico---------	7,894,475	105,222,560	.67
Utah---------------	30,451,792	527,232,800	.87
Washington 3/------	567,550	8,125,765	.72
East of the Miss.-- (except Michigan)--	1,374,973	4/ 32,280,000	---
	91,021,243	1,590,528,733	.87

1/ In addition 3,696,413 tons were treated by straight leaching.
2/ In addition 62,774,397 pounds of copper were recovered by straight leaching.
3/ Mostly zinc-copper ore.
4/ Includes copper from magnetite-pyrite-chalcopyrite ore.

Table 6. - Copper ore, old tailings, etc. smelted in the United States in 1951 with contents in terms of recovered copper

	Ore, old tailings, etc. smelted		
	Short tons	Copper produced (pounds)	Percent cu
Arizona----------	549,484	50,047,988	4.55
California-------	1,709	176,000	5.15
Colorado---------	659	46,105	3.50
Idaho------------	92	21,376	11.62
Montana----------	44,709	1,694,883	1.90
Nevada-----------	68,648	1,563,300	1.14
New Mexico -------	108,462	2,580,677	1.19
Oregon-----------	87	8,700	5.00
Utah-------------	2,664	210,479	3.95
Washington-------	44	3,035	3.45
	776,558	56,352,543	3.63

Table 7. - Copper produced by primary smelters in the United States from domestic and foreign primary, and from secondary materials, 1947-51, in short tons

	Domestic	Foreign	Secondary	Total
1947	862,872	81,821	103,559	1,048,252
1948	842,477	82,973	89,779	1,015,229
1949	757,931	101,702	71,089	930,722
1950	911,352	97,177	62,827	1,071,356
1951	930,774	105,863	43,297	1,079,934

Table 8. - Refined copper produced at primary plants in the United States, 1947-51, in short tons

	From primary materials			From scrap		
	Domestic	Foreign	Total	New	Old	Total
1947	909,213	250,757	1,159,970	134,248	134,837	269,085
1948	860,022	247,424	1,107,446	115,710	129,666	245,376
1949	695,015	232,912	927,927	81,693	130,699	212,392
1950	920,748	319,086	1,239,834	89,360	100,386	189,746
1951	951,559	255,429	1,206,988	83,021	52,002	135,023

Table 9. - Refined copper produced in the United States from scrap, 1947-51, in short tons

	Primary plants	Secondary plants	Total
1947	269,085	31,832	300,917
1948	245,376	31,668	277,044
1949	212,392	30,749	243,141
1950	189,746	52,137	241,883
1951	135,023	30,688	165,711

Table 10. - Production, shipments and stocks of copper sulfate in 1947-51, in short tons

	Production		Shipments	Stocks at end of year 1/
	Gross weight	Copper content	(Gross weight)	(Gross weight)
1947	89,100	22,276	86,600	10,200
1948	96,700	24,186	93,100	11,800
1949	79,000	19,749	84,400	6,400
1950	87,300	21,814	91,300	2,200
1951	106,944	26,736	2/ 104,260	4,888

1/ Some small quantities are purchased and used by producing companies so that the figures given will not balance exactly. 2/Producers' reports indicated that 43,960 tons were for agriculture, 27,008 tons for industrial, and 33,292 tons for other.

Table 11. - Secondary copper produced in the United States, 1947-51, in short tons

	1947	1948	1949	1950	1951 1/
Copper recovered as unalloyed copper----------------------	303,092	284,026	250,089	260,704	189,000
Copper recovered in alloys 2/-	658,649	688,762	463,054	716,535	786,000
Total secondary copper------	961,741	972,788	713,143	977,239	975,000
From new scrap--------------	458,365	467,324	329,595	492,028	479,000
From old scrap--------------	503,376	505,464	383,548	485,211	496,000

1/ Preliminary. Final data will be released as soon as completed.
2/ Includes copper in chemicals, as follows: 1947, 18,838; 1948, 17,612; 1949, 14,840; 1950, 17,413; 1951, not available.

Table 12. - New refined copper withdrawn from total year's supply on domestic account, 1948-51, in short tons

	1948	1949	1950	1951
Total supply of new copper--	1,356,570	1,203,738	1/1,557,197	1,445,535
Stocks at beginning of year-	60,000	67,000	61,000	26,000
Total available supply-	1,416,570	1,270,738	1/1,618,197	1,471,535
Copper exported 2/----------	142,598	137,827	144,561	133,305
Stocks at end of year-------	67,000	61,000	26,000	35,000
	209,598	198,827	170,561	168,305
Withdrawn on domestic account 3/----------------	4/1,214,000	4/1,072,000	4/1,447,000	4/1,303,000

1/ Revised figure.
2/ Includes refined copper in ingots, bars, or other forms.
3/ Adjusted for Office of Metals Reserve stock changes; MR stocks consigned to National Strategic Stock Pile late in 1948.
4/ Includes copper delivered by industry to the Government strategic stock pile.

Table 13. - Refined copper consumed in 1948-51, by types of consumers, in short tons

	1948	1949	1950	1951 1/
Brass mills-------------------	614,314	478,126	675,100	634,533
Wire mills--------------------	765,849	623,713	713,354	705,706
Secondary smelters------------	6,805	4,463	6,209	9,738
Chemical plants---------------	3,229	1,576	3,122	2/ 30,000
Foundries and miscellaneous---	30,387	21,808	26,649	
	1,420,584	1,129,686	1,424,434	1,380,000

1/ Preliminary. Final data will be released as soon as completed.
2/ Estimated.

Table 14. - Stocks of copper at primary smelting and refining plants in the United States at end of year, 1947-51, in short tons

Year	Refined copper	Blister and materials in process of refining 1/
1947	60,000	213,000
1948	67,000	183,000
1949	61,000	261,000
1950	26,000	232,000
1951	35,000	182,000

1/ Includes copper in transit from smelters in the United States to refineries therein.

Table 15. - Average yearly quoted prices of electrolytic copper for domestic and export shipments, f.o.b. refineries, in the United States 1947-51, in cents per pound

	Domestic f.o.b. refinery 2/	Domestic f.o.b. refinery 2/	Export f.o.b. refinery 2/
1947	21.15	20.958	21.624
1948	22.20	22.038	22.348
1949	19.36	19.202	19.421
1950	21.46	21.235	21.549
1951	24.38	24.200	26.258

1/ As reported by American Metal Market.
2/ As reported by E & MJ Metal and Mineral Markets.

Table 16. - Copper (unmanufactured) imported into the United States, in 1951, by countries, in short tons
(General imports)
(U. S. Department of Commerce)

Country of origin	Ore (copper content)	Concentrates (copper content)	Regulus, black or coarse copper (copper content)	Unrefined black blister and converter in pigs or converter bars	Refined in ingots, plates or bars	Old and clippings for remanufacture	Total
Bolivia	219	4,230	-----	-----	----	-----	4,449
Canada and Newfoundland	15	24,728	658	135	28,354	664	54,554
Chile	862	11,235	-----	47,178	208,294	633	268,202
Cuba	58	21,837	-----	-----	----	407	22,302
Japan	-----	------	-----	521	632	756	1,909
Malta, Gozo, etc.	-----	1/5,556	-----	-----	----	-----	1/5,556
Mexico	47	6,378	1,946	38,656	702	94	47,823
Northern Rhodesia	-----	------	-----	44,190	----	-----	44,190
Peru	818	6,533	440	1,885	377	1	10,054
Philippines, Republic of	2/	2/12,608	-----	-----	----	-----	12,608
Union of South Africa	-----	3,626	-----	3,698	----	8	7,332
Yugoslavia	-----	------	-----	6,223	3/	-----	6,223
Other countries	16	853	7	109	188	3,001	4,174
Total	2,035	97,584	3,051	142,595	238,547	5,564	489,376

1/ Cyprus
2/ Some copper in "Ore" and "Other" from Republic of Philippines is not separately classified and is included under "Concentrates."
3/ Less than one ton.

Table 17. - Copper exported from the United States in 1951, by countries, in short tons
(U. S. Department of Commerce)

Country	Ore, concentrates, composition metal and unrefined copper (copper content)	Refined in bars, ingots, etc.	Old and scrap	Pipes and tubes	Plates and sheets	Rods	Wire (bare)	Insulated wire and cable
Argentina	-	1,276	-	24	-	-	16	338
Austria	-	655	193	-	-	-	1	22
Belgium and Luxemburg	-	562	13	35	1	(1)	12	27
Brazil	2	3,621	-	70	15	1	707	234
Canada	4	37	705	614	205	181	1,822	1,680
Colombia	1	(1)	-	50	23	-	123	489
Cuba	-	4	-	394	21	4	269	1,028
Denmark	-	1,372	-	(1)	-	112	(1)	94
France	-	18,626	-	4	-	-	4	26
Germany	-	10,273	5,650	-	1	-	11	7
Greece	-	637	-	9	2	-	2	237
India	-	217	682	42	-	-	138	52
Italy	-	7,948	365	11	-	-	997	1,345
Mexico	71	28	-	399	149	77	968	773
Netherlands	-	8,190	91	40	-	117	8	39
Norway	-	1,911	-	11	-	-	-	5
Philippines, Republic of	1	-	-	13	22	-	193	926
Sweden	-	593	-	1	1	-	-	11
Switzerland	-	5,415	-	14	-	12	1	11
Union of South Africa	-	560	-	17	2	-	1,191	312
United Kingdom	153	70,161	-	1	-	-	1	29
Venezuela	1	1	-	106	13	-	469	1,007
Other	1	1,218	2	305	117	17	1,050	5,340
Total	234	133,305	7,701	2,160	572	521	7,983	14,032

1/ Less than one ton.

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UNITED STATES DEPARTMENT OF THE INTERIOR
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FOR IMMEDIATE RELEASE

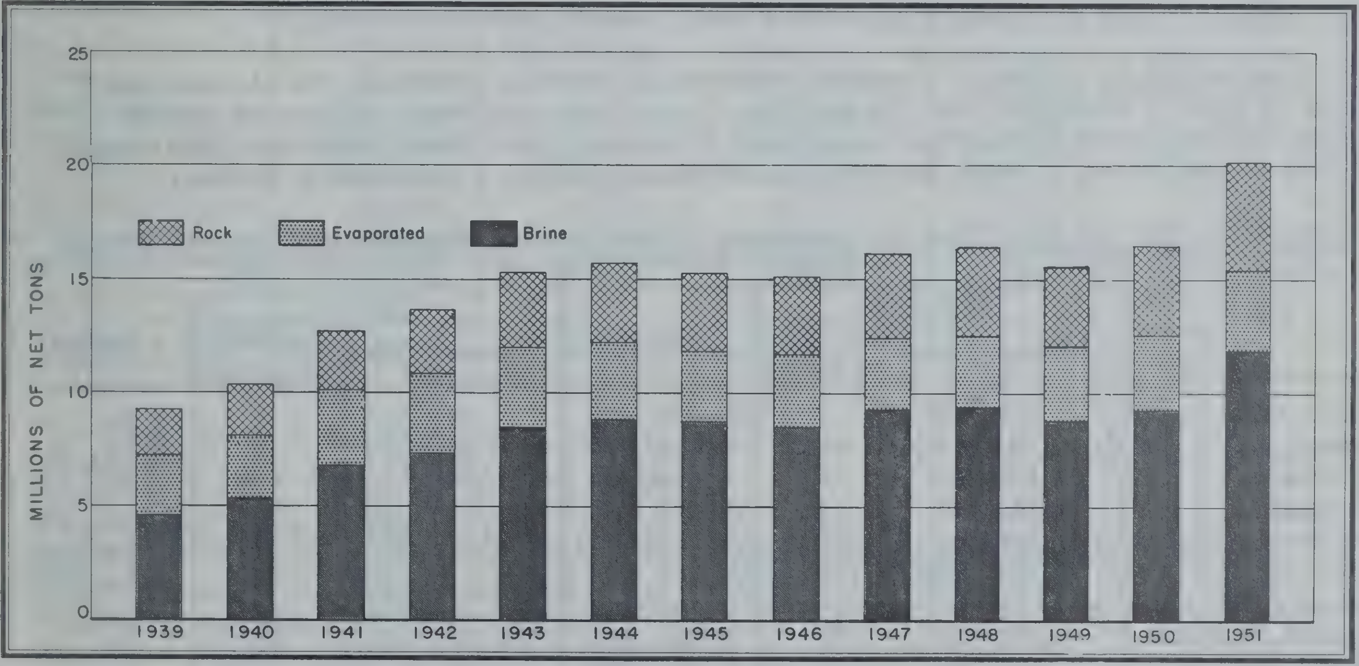
MINERAL MARKET REPORT
MMS. NO. 2098

SALT PRODUCTION IN 1951 ATTAINED A RECORD OF 20 MILLION TONS

The high level of industrial activity in 1951 was reflected in a record production of 20,207,131 short tons of salt according to reports of producers to the Bureau of Mines, U. S. Department of the Interior. Output was 22 percent greater than in 1950. Outstanding features were the 2½ million ton increase in the production of salt-in-brine--27 percent more than in the previous year, and the gain of 19 percent--about three-fourths of a million tons, in sales of rock salt. Evaporated salt output gained 10 percent. Total mine-or-refinery value of the salt produced increased $10,000,000 to a peak of $69,735,000 in 1951.

The increases were due primarily to enlarged demands of the soda ash, chlorine, and other chemical industries.

Exports, largely to Canada and Japan, increased to nearly 440,000 tons, but imports declined to only 4,329 tons.



Trends in the quantity of rock salt, evaporated salt, and brine (in terms of salt content) sold or used by producers in the United States, 1939-51

Prepared by Florence E. Harris and F. M. Barsigian, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

(Over)

TABLE 1.--Salient statistics of the salt industry in the United States, 1935-39 (average) and 1950-51 1/

	1935-39 Average	1950	1951
Sold or used by producers:			
Dry salt:			
Evaporated (manufactured) short tons....	2,507,374	3,329,288	3,654,808
Rock salt....................do........	1,947,254	3,927,267	4,662,194
Total....................do........	4,454,628	7,256,555	8,317,002
Value............................	$21,730,339	$51,795,728	$58,425,022
In brine:			
Short tons............................	4,205,587	9,373,254	11,890,129
Value............................	$1,675,273	$8,115,615	$11,309,978
Total salt:			
Short tons............................	8,660,215	16,629,809	20,207,131
Value 2/............................	$23,405,612	$59,911,343	$69,735,000
Imports for consumption:			
Short tons............................	46,766	7,869	4,329
Value............................	$111,411	$58,819	$46,831
Exports:			
Short tons............................	90,214	190,377	439,116
Value............................	$521,652	$1,776,062	$3,617,054
Apparent consumption 3/: short tons.........	8,616,767	16,447,301	19,772,344

1/ Includes Puerto Rico.
2/ Values are f.o.b. mine or refinery and do not include cost of cooperage or containers.
3/ Quantity sold or used by producers plus imports minus exports.

Production by States.- A general expansion of salt producing facilities was noted in 1951. Michigan, New York, Ohio, Louisiana, and Texas accounted for 82 percent of the 1951 production, a drop of 2 percent from their combined 1950 total as California, with a sharp production increase, gained 2 percentage points.

TABLE 2.--Salt sold or used by producers in the United States, 1950-51, by States

State	1950			1951		
	Quantity		Value	Quantity		Value
	Short tons	Percent of total		Short tons	Percent of total	
California......	868,496	5	$3,816,655	1,275,574	7	$5,261,780
Kansas..........	846,374	5	5,914,514	900,917	5	6,639,343
Louisiana.......	2,278,811	14	6,902,502	2,737,149	13	7,662,179
Michigan........	4,446,667	27	18,178,765	5,137,639	25	21,221,330
New York........	2,806,927	17	14,405,362	3,518,715	17	16,552,890
Ohio............	2,515,205	15	5,491,553	3,112,472	15	5,848,478
Puerto Rico.....	13,545	1/	137,225	10,566	1/	119,338
Texas...........	1,852,138	11	2,846,789	2,401,063	12	4,000,100
Utah............	116,694	1	511,938	131,444	1	570,379
West Virginia...	367,942	2	1,238,588	379,299	2	1,314,818
Other States 2/.	517,010	3	467,452	602,293	3	544,365
Total.........	16,629,809	100	59,911,343	20,207,131	100	69,735,000

1/ Less than 0.5 percent.
2/ Includes Nevada, New Mexico, Oklahoma, and Virginia.

Method of recovery. - Production by basic methods follows in Table 3.

TABLE 3.--Salt sold or used by producers in the United States, 1950-51, by method of recovery 1/

Method of recovery	1950		1951	
	Short tons	Value	Short tons	Value
Evaporated:				
Bulk:				
Open pans or grainers	468,169	$7,545,403	450,835	$7,860,364
Vacuum pans	1,868,804	18,640,894	1,912,223	19,287,970
Solar	726,480	2,708,065	1,007,489	3,750,780
Pressed blocks	265,835	3,465,935	284,261	3,936,356
Rock:				
Bulk	3,864,186	18,730,831	4,591,597	22,801,609
Pressed blocks	63,081	704,600	70,597	787,943
Salt in brine (sold or used as such)	9,373,254	8,115,615	11,890,129	11,309,978
Total	16,629,809	59,911,343	20,207,131	69,735,000

1/ Includes production in Puerto Rico.

Evaporated salt. - The 1951 total of 3,654,808 short tons of evaporated salt was supplied by 48 plants in 12 States and Puerto Rico. Evaporated salt production in the various States is shown in Table 4.

TABLE 4.--Evaporated salt sold or used by producers in the United States, 1949-51, by States

State	1949		1950		1951	
	Short tons	Value	Short tons	Value	Short tons	Value
Kansas	334,611	$3,616,344	344,751	$4,066,310	360,785	$4,659,03
Louisiana	99,725	886,953	115,308	1,119,300	119,368	1,170,30
Michigan	873,949	9,904,170	868,349	10,736,781	818,845	11,081,12
New York	417,518	5,535,001	487,245	6,375,966	502,216	6,419,06
Ohio	445,591	3,976,109	472,966	4,274,738	479,246	3,908,14
Puerto Rico	12,664	77.322	13,545	137,225	10;566	119,33
Other States 1/	1,100,303	5,727,845	1,027,124	5,649,977	1,363,782	7,478,46
Total	3,284,361	29,723,744	3,329,288	32,360,297	3,654,808	34,835,47

1/ Includes California, Nevada, New Mexico, Texas (1951 - 87,644 tons valued at $1,137,376), Utah, and West Virginia.

Rock salt. - Shipments of rock salt were reported from 18 mines in 8 States and increased 734,927 tons in 1951 over 1950.

TABLE 5.--Rock salt sold by producers in the United States, 1/ 1946-51

Year	Short tons	Value	Year	Short tons	Value
1946	3,412,008	$13,308,001	1949	3,444,341	$16,232,479
1947	3,754,353	15,989,680	1950	3,927,267	19,435,431
1948	3,846,846	16,970,742	1951	4,662,194	23,589,552

1/ There is no production of rock salt in Puerto Rico.

Pressed blocks. - Pressed blocks, chiefly for cattle, were made from evaporated salt in 22 plants and from rock salt in 8 plants in 1951.

TABLE 6.--Pressed-salt blocks sold by original producers of the salt in the United States, 1/ 1947-51

Year	From evaporated salt		From rock salt		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1947.	260,399	$2,708,857	69,163	$638,958	329,562	$3,347,815
1948.	274,511	2,933,694	48,830	459,986	323,341	3,393,680
1949.	268,838	3,270,664	62,749	602,855	331,587	3,873,519
1950.	265,835	3,465,935	63,081	704,600	328,916	4,170,535
1951.	284,261	3,936,356	70,597	787,943	354,858	4,724,299

1/ There is no production of pressed-salt blocks in Puerto Rico.

Salt content in brine. - Facilities for the production of salt in brine are readily expandible and, as a result of a rising demand in 1951, this type of salt production increased to 11,890,129 short tons from 9,373,254 in 1950. This quantity was 59 percent of the total 1951 salt production.

CONSUMPTION AND USES OF SALT IN THE UNITED STATES

Table 7 shows domestic consumption primarily.

The largest use of salt was for manufacture of soda ash (41 percent of the total in 1951), and the next in importance was for chlorine and chlorine compounds (23 percent). Expansion programs were adopted by most of the chemical companies producing these salt derivatives. Requirements of defense production programs have accelerated production of salt.

Increases, although on a smaller scale, are noted for highways, ice control, other chemicals, livestock and agriculture, water treatment, canning, meat packing, and metallurgy.

Minor decreases appear for salt application in dyes and organic chemicals, hides and leather, and in table and other household uses.

The "Undistributed" item in Table 7 includes a number of miscellaneous uses of all three types of salt. About 130,000 tons of salt, exclusive of chlorine and other salt derivatives so used, was employed in the manufacture of rubber, and about 52,000 tons was used in making pulp and paper. Other uses include sales to State and Federal Governments and to industry for brick and tile, in making glass, explosives, oil-well drilling, pharmaceuticals, petroleum refining, vegetable oil refining, and some miscellaneous and unspecified.

TABLE 7.--Salt sold or used by producers in the United States, 1950-51, by classes and uses, in thousands of short tons

Use	1950				1951			
	Evaporated	Rock	Brine	Total	Evaporated	Rock	Brine	Total
Chlorine, bleaches, chlorates, etc.	419	739	2,731	3,889	515	917	3,277	4,709
Soda ash	(1/)	-----	6,379	1/ 6,379	(1/)	-----	8,303	1/ 8,303
Dyes and organic chemicals	68	2/ 84	-----	2/ 152	52	77	-----	129
Soap (precipitant)	53	11	-----	64	51	10	-----	61
Other chemicals	102	2/ 609	(3/)	2/3/ 711	107	728	(3/)	3/ 835
Textile processing	29	2/ 100	(3/)	2/3/ 129	21	103	(3/)	3/ 124
Hides and leather	112	2/ 145	(3/)	2/3/ 257	93	139	(3/)	3/ 232
Meat packing	339	2/ 388	-----	2/ 727	352	395	-----	747
Fish curing	34	12	-----	46	32	14	-----	46
Butter, cheese, and other dairy products	71	5	-----	76	63	6	-----	69
Canning and preserving	138	25	-----	163	173	29	-----	202
Other food processing	219	20	-----	239	221	10	-----	231
Refrigeration	54	2/ 133	(3/)	2/3/ 187	58	134	(3/)	3/ 192
Livestock, agriculture, and general farm use 4/	670	286	-----	956	735	321	-----	1,056
Highways, railroads and other dust and ice control	2/ 13	2/ 578	-----	2/ 591	19	766	-----	785
Table and other household use	527	95	-----	622	496	104	-----	600
Water treatment	278	2/ 274	(3/)	2/3/ 552	295	315	(3/)	3/ 610
Metallurgy	28	2/ 71	-----	2/ 99	36	81	-----	117
Undistributed 5/	2/ 176	2/ 352	263	2/ 791	336	513	310	1,159
Total	3,330	3,927	9,373	16,630	3,655	4,662	11,890	20,207

1/ Data for evaporated salt included with "Undistributed," in order to avoid disclosure of individual company operations.

2/ Revised figure.

3/ Data for salt in brine included with "Undistributed," in order to avoid disclosure of individual company operations.

4/ Livestock salt is about 90 percent of the total.

5/ Comprises miscellaneous uses and uses for which data may not be shown separately (see footnotes 1 and 3); also includes some exports and consumption in Territories and possessions.

TABLE 8.--Distribution (shipments) of evaporated and rock salt in the United States, 1950-51, by States of destination, in short tons

Destination	1950		1951	
	Evaporated	Rock	Evaporated	Rock
Alabama	17,172	99,387	16,898	97,996
Arizona	19,198	2,239	17,846	3,295
Arkansas	12,918	56,939	12,327	74,742
California	408,418	53,927	456,083	88,525
Colorado	42,311	27,650	47,173	69,085
Connecticut	14,172	19,104	14,159	20,836
Delaware	5,030	10,257	4,605	7,739
District of Columbia	5,642	1,730	5,696	2,139
Florida	10,906	33,340	10,341	35,667
Georgia	23,572	49,582	23,095	48,708
Idaho	17,948	2,484	18,923	1,315
Illinois	231,858	277,045	234,814	312,540
Indiana	113,567	75,277	113,024	84,245
Iowa	113,400	99,597	115,298	96,609
Kansas	54,398	191,770	56,200	193,122
Kentucky	36,373	73,712	31,660	116,450
Louisiana	16,357	121,596	19,288	130,756
Maine	11,846	59,060	10,044	72,639
Maryland	38,347	71,285	41,440	81,871
Massachusetts	60,350	95,163	51,914	94,147
Michigan	115,548	176,054	123,886	227,740
Minnesota	118,087	74,217	118,898	73,117
Mississippi	10,864	25,589	9,265	24,954
Missouri	77,207	63,769	78,831	71,168
Montana	21,502	1,306	21,779	1,024
Nebraska	58,365	66,246	65,446	64,119
Nevada	6,748	86,093	4,807	141,780
New Hampshire	5,397	68,554	5,344	70,191
New Jersey	120,293	142,785	117,470	150,451
New Mexico	10,195	23,054	12,979	30,561
New York	220,557	613,067	213,213	708,011
North Carolina	51,943	71,740	47,646	78,621
North Dakota	12,213	4,423	11,230	4,688
Ohio	203,993	218,315	211,091	320,925
Oklahoma	31,145	19,815	33,347	20,972
Oregon	60,167	523	98,844	470
Pennsylvania	136,306	121,886	139,422	142,037
Rhode Island	8,966	12,928	8,360	12,322
South Carolina	12,776	19,854	12,249	19,730
South Dakota	20,291	14,145	22,744	15,210
Tennessee	35,567	73,081	33,363	72,596
Texas	60.403	207,140	93,296	241,252
Utah	23,421	1,672	28,244	2,630
Vermont	7,067	27,627	5,926	27,644
Virginia	61,841	93,487	58,766	107,744
Washington	216,348	340	250,943	1,040
West Virginia	155,128	72,874	160,815	115,158
Wisconsin	134,112	47,039	136,709	55,169
Wyoming	10,515	2,987	11,128	2,880
Other 1/	68,540	155,513	217,939	225,56
Total	3,329,288	3,927,267	3,654,808	4,662,194

1/ Includes shipments to Territories and possessions of the United States, exports, and some shipments to unspecified destinations.

WORLD PRODUCTION

The following table on world production of salt was prepared in the Foreign Minerals Statistical Unit, Region IX, Bureau of Mines, for inclusion in Minerals Yearbook 1951.

TABLE 9.--World production of salt, 1946-51, by countries 1/, in metric tons
[Compiled by Helen L. Hunt]

Country 1/	1946	1947	1948	1949	1950	1951
North America:						
Canada	486,781	672,697	2/668,284	2/681,278	2/779,132	876,542
Costa Rica	8,000	6,252	6,500	8,200	8,400	5,445
Guatemala	(3/)	(3/)	11,474	11,962	2/11,502	12,061
Honduras	850	726	1,089	(3/)	4,397	4,650
Mexico	131,972	122,235	4/156,685	(3/)	(3/)	(3/)
Nicaragua	4/6,000	7,503	4/9,475	4/10,230	11,172	12,289
Panama	7,958	4,412	3,374	3,408	2/5,000	7,480
Salvador	22,680	16,483	21,213	2/4/16,000	4/16,000	4/27,200
United States:						
Rock salt	3,095,305	3,405,874	3,489,782	3,124,637	3,562,738	4,229,449
Other salt	10,632,274	11,157,887	11,390,957	11,002,165	11,523,492	14,102,056
West Indies:						
British:						
Bahamas	36,580	60,960	63,000	60,960	60,960	51,000
Turks and Caicos Islands	31,571	...	38,610	61,765	60,960	(3/)
Cuba	56,782	51,225	55,339	59,874	59,266	63,500
Dominican Republic:						
Rock salt	2,776	2,084	2,365	2,412	2,304	2,270
Other salt	15,746	14,918	13,079	8,140	13,740	8,092
Haiti 4/	8,000	8,000	8,000	8,000	(3/)	(3/)
Netherlands Antilles	2,017	217	482	370	3,000	(3/)
South America:						
Argentina:						
Rock salt	(3/)	(3/)	(3/)	(3/)	(3/)	(3/)
Other salt	384,000	384,000				
Brazil	609,198	562,570	781,378	800,872	873,803	(3/)
Chile:						
Rock salt	52,093	54,289	47,164	35,079	46,709	(3/)
Other salt	4/31,000	4/28,000	4/30,800	4,450	942	
Colombia	2/124,292	121,247	2/124,352	2/126,092	2/141,963	162,124
Ecuador	35,070	29,400	25,110	16,833	34,902	32,756
Peru	56,615	60,108	63,049	2/55,968	66,501	(3/)
Venezuela	90,555	35,794	35,533	71,926	56,439	38,920
Europe:						
Austria:						
Rock salt	554	4,348	1,752	719	1,085	692
Other salt	168,150	183,764	197,615	229,423	236,532	267,456
Bulgaria:						
Rock salt	13,659	(3/)	4/120,000	(3/)	(3/)	(3/)
Other salt	(3/)	(3/)				
Czechoslovakia 5/	9,232	(3/)	(3/)	(3/)	(3/)	(3/)
France:						
Rock salt and salt from springs	1,514,470	2,148,140	2,489,036	2,034,847	2,049,373	(3/)
Other salt	476,750	467,410	446,539	2/742,721	604,550	430,608
Germany, West	1,619,112	1,825,062	2,035,694	1,800,000	2,470,000	2,757,785
Greece	105,000	51,000	52,208	86,776	102,329	82,434
Italy:						
Rock salt	2/412,654	2/723,140	2/727,083	814,420	717,158	159,216
Other salt	792,844	2/534,794	464,456	576,535	651,935	965,652
Malta	1,402	1,631	1,869	1,807	1,827	3,841
Netherlands	2/194,706	2/251,426	250,417	331,000	412,570	4/473,000
Poland	280,099	619,770	725,774	2/836,253	(3/)	(3/)
Portugal:						
Rock salt	46	69	49	41	42	(3/)
Other salt 6/	82,974	25,071	10,660	16,903	30,765	29,374
Rumania: Rock salt	345,000	314,485	(3/)	(3/)	(3/)	(3/)
Spain:						
Rock salt	262,651	265,248	292,881	288,896	2/308,228	367,809
Other salt	510,121	569,343	696,600	546,886	901,575	893,297
Switzerland	92,089	107,757	112,218	4/100,000	94,000	114,000
United Kingdom:						
Great Britain:						
Rock salt	20,819	40,639	41,000	2/41,658	41,658	(3/)
Other salt	3,385,540	3,148,639	3,794,000	2/3,741,000	4,223,814	(3/)
Northern Ireland	13,474	12,603	2/13,000	2/13,000	13,000	13,251
Yugoslavia	113,200	111,200	102,300	4/108,900	131,000	95,646

See footnotes at end of table.

TABLE 9.--World production of salt, 1946-51, by countries 1/, in metric tons--Continued

Country 1/	1946	1947	1948	1949	1950	1951
Asia:						
Aden	114,856	197,672	275,408	308,302	259,972	309,186
Burma	44,621	52,566	44,880	31,692	21,457	(3/)
Ceylon	43,666	23,231	78,300	28,780	66,093	36,990
China 4/	1,683,000	2,007,000	2,480,000	2,000,000	2,500,000	3,000,000
Taiwan (Formosa)	191,850	4/250,000	2/365,803	2/253,948	2/175,063	274,766
Cyprus	7/3,429	15,622	...	...	4,133	11,198
India:						
Rock salt	266,447	4,605	4,123	4,229	5,130	5,519
Other salt	2,235,390	1,560,471	2/2,296,759	2/2,017,831	2/2,609,029	2,889,377
Indochina	8/14,735	41,556	64,000	113,600	2/75,722	93,908
Indonesia	80,000	12,000	360,000	320,000	375,000	4/300,000
Iran	(3/)	9/6,000	(3/)	4/100,000	4/100,000	76,252
Iraq:						
Rock salt	9,512	12,365	14,000	8,989	2/11,861	16,503
Other salt						
Israel-Jordan:						
Rock salt	1,571	2,454	(3/)	(3/)	(3/)	(3/)
Other salt	23,163	12,567	8,302	2/11,500	18,000	12,212
Japan	10/358,946	247,466	339,668	395,676	418,144	430,405
Korea	4/152,000	4/131,000	11/89,979	11/188,812	(3/)	(3/)
Lebanon	(3/)	(3/)	4/5,080	4/2,540	6,604	(3/)
Pakistan:						
Rock salt	(12/)	201,290	154,060	175,162	142,522	147,109
Other salt	(12/)	217,755	184,625	205,318		
Philippine Islands	(3/)	(3/)	(3/)	2/52,276	56,283	52,960
Portuguese India	6/15,428	20,321	6/10,719	18,132	17,608	31,577
Syria	2/15,437	20,728	2/20,321	4/26,000	2/12,000	7,000
Thailand (Siam)	137,601	4/150,000	4/200,000	4/150,000	4/200,000	250,000
Turkey:						
Rock salt	20,215	26,978	28,187	2/17,920	2/20,330	21,584
Other salt	186,088	249,865	238,755	2/298,425	2/284,912	249,970
Africa:						
Algeria	66,570	75,680	73,038	101,676	75,656	(3/)
Anglo-Egyptian Sudan	40,982	36,992	36,238	2/43,029	40,754	46,215
Angola	61,657	38,783	53,423	41,286	40,473	49,764
Belgian Congo	2/639	2/768	4/1,000	2/813	550	583
Canary Islands	13,659	6,956	13,209	5,283	6,072	(3/)
Cape Verde Islands	14,376	9,246	13,632	19,301	(3/)	(3/)
Egypt	6/226,090	6/622,629	6/359,823	349,878	2/539,016	687,038
Eritrea	40,967	45,722	60,963	85,760	53,922	4/60,000
Ethiopia: Rock salt 4/	10,000	10,000	10,000	10,000	10,000	10,000
French Morocco:						
Rock salt	8,570	10,480	2/10,772	34,100	60,000	45,971
Other salt	40,975	34,095	24,287			
French Somaliland	45,000	48,000	60,000	60,000	4/80,000	4/40,000
French West Africa	4/55,000	4/50,000	4/50,000	50,000	66,000	4/66,000
Italian Somaliland	114	715	(3/)	3,000	1,500	2,000
Kenya	15,635	14,058	16,813	18,820	18,722	19,084
Libya:						
Cyrenaica	700	200	140	4/500	(3/)	4/2,500
Tripolitania	2,350	3,000	6,000	4/6,000	4/9,000	(3/)
Mauritius	3,165	3,991	3,404	5,200	2,606	(3/)
Mozambique	7,210	8,663	10,100	11,004	(3/)	(3/)
South-West Africa:						
Rock salt	3,533	2,788	4,436	2,468	2/3,915	4,706
Other salt	10,590	9,861	10,414	13,730	2/12,903	39,880
Spanish Morocco 4/	254	254	254	254	254	(3/)
Tanganyika	13,373	10,837	2/11,581	2/14,970	14,152	16,107
Tunisia	93,400	114,790	2/105,244	98,085	98,771	160,000
Uganda	5,679	7,003	7,011	7,400	7,413	(3/)
Union of South Africa	13/143,677	(3/)	4/172,000	13/162,936	2/106,396	149,795
Australia:						
South Australia	160,753	157,563	175,865	171,154	193,763	222,424
Australia, other	(3/)	(3/)	88,308	77,778	85,651	
Total (estimate) 1/	38,335,000	40,500,000	44,400,000	43,600,000	48,000,000	(3/)

1/ In addition to the countries listed, salt is produced in Afghanistan, Albania, Bolivia, British Somaliland, French Equatorial Africa, Gold Coast, Hungary Leeward Islands, Madagascar, Nigeria, Sweden, and U.S.S.R., but figures of production are not available. Russian production is known to exceed 4,000,000 metric tons annually. Estimates included in the total (except 1951)

2/ Revised figure. 3/ Data not available; estimates included in the total (except 1951).

4/ Estimate. 5/ Excludes Sub-Carpathia, ceded to Hungary and U.S.S.R. 6/ Exports. 7/ Incomplete data.

8/ Cochin-China only. 9/ Fiscal year ended March 20 of year following that stated.

10/ Fiscal year ended March 31 of year following that stated. 11/ Republic of Korea only.

12/ Included under India. 13/ Fiscal year ended June 30 of year stated.

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UNIMM

MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Oscar L. Chapman, Secretary J. J. FORBES, Director

FOR RELEASE: October 7, 1952 MINERAL MARKET REPORT NO. MMS 2099

MARKETED PRODUCTION OF NATURAL GAS INCREASED 19 PERCENT IN 1951

Marketed production of natural gas in the United States climbed to 7,457,359 million cubic feet in 1951 from 6,282,060 million in 1950. Texas, Louisiana, and New Mexico accounted for 82 percent of the increase. Production in Pennsylvania after a long static period increased as the result of discoveries made in 1950.

The gross quantity of gas placed in underground storage in 1951 was 347,690 million cubic feet, more than a 50 percent increase over the previous year. The net increase of gas in underground storage during 1951 was 138,262 million cubic feet.

Consumption of natural gas in the United States in 1951 increased to 7,102,562 million cubic feet from 6,026,404 million in 1950. North Carolina, South Carolina, Massachusetts, and New Hampshire received natural gas for the first time. Aside from Texas, California and New York showed the largest increases in consumption. In each case this increase resulted primarily from the completion of an interstate pipeline. The quantities consumed by various classes of consumers in 1951 and the percent change compared with 1950 are as follows: Residential, 1,474,725 million cubic feet, +23 percent; commercial, 464,309, +20 percent; field, 1,441,870, +21 percent; petroleum refineries, 537,774, +18 percent; other industrial, 3,183,884, +14 percent.

The average value of natural gas at the wellhead rose from 6.5 cents per thousand cubic feet in 1950 to 7.3 cents in 1951. This is the sharpest rise in the average value yet recorded during one year. Total value of marketed production at the wellhead in 1951 was $542,964,000. The total value at point of consumption of all natural gas used in the United States in 1951 was $2,118,674,000 averaging 29.8 cents per thousand cubic feet. This is an increase of 3.3 cents in the average over 1950 caused in part by large expansion of consumption in areas removed from the producing fields where gas has a higher value.

Interstate shipments and exports of natural gas increased 27 percent, maintaining the same rate of increase recorded in 1950.

The number of residential consumers of natural gas increased by 4.5 million to 21.4 million. Half of this increase was in the number of consumers of mixed gas, primarily in New York. The number of commercial consumers increased by 0.3 million to 1.6 million.

Prepared under the supervision of H. J. Barton, Petroleum and Natural Gas Branch, Fuels and Explosives Division.

INTERSTATE SHIPMENTS, AND EXPORTS OF NATURAL GAS IN 1951 [1]

Producing region	Quantity shipped (million cu. ft.)	Consuming State or country	Quantity received (million cu. ft.)
Middle Atlantic			
New Jersey	-	Canada	114
New York	419	New Jersey	18
Pennsylvania	38,632	New York	36,909
		Ohio	1,726
		Pennsylvania	284
Total	39,051		39,051
South Atlantic			
Delaware	-	Canada	2
District of Columbia	-	District of Columbia	2,554
Florida	-	Kentucky	951
Georgia	-	Maryland	3,879
Maryland	2,155	New Jersey	8
North Carolina	-	New York	3,245
South Carolina	-	Ohio	68,019
Virginia	19	Pennsylvania	44,198
West Virginia	124,487	Tennessee	13
		Virginia	2,709
		West Virginia	1,083
Total	126,661		126,661
East North Central			
Illinois	-	Canada	67
Indiana	515	Illinois	515
Michigan	67		
Ohio	-		
Wisconsin	-		
Total	582		582
East South Central			
Alabama	-	Alabama	55,882
Kentucky	47,213	Delaware	2
Mississippi	110,047	District of	
Tennessee	-	Columbia	401
		Florida	8,820
		Georgia	43,682
		Illinois	4
		Indiana	280
		Kentucky	697
		Louisiana	1,607
		Maryland	758
		Mississippi	56
		New Jersey	7
		New York	324
		Ohio	30,101
		Pennsylvania	3,756
		Virginia	516
		West Virginia	10,367
Total	157,260		157,260
West North Central			
Iowa	-	Canada	997
Kansas	269,273	Colorado	42,657
Minnesota	-	Delaware	4
Missouri	-	Illinois	9,083
Nebraska	-	Indiana	12,554
North Dakota	456	Iowa	30,607
South Dakota	-	Michigan	27,431
		Minnesota	45,928
		Missouri	35,574
		Montana	319
		Nebraska	43,628
		New Jersey	25
		New York	43
		North Dakota	67
		Ohio	13,270
		Oklahoma	1,430
		Pennsylvania	836
		South Dakota	4,337
		West Virginia	9
		Wyoming	930
Total	269,729		269,729

Producing region	Quantity shipped (million cu. ft.)	Consuming State or country	Quantity received (million cu. ft.)
West South Central			
Arkansas	1,371	Alabama	58,396
Louisiana	540,599	Arizona	35,550
Oklahoma	220,685	Arkansas	114,854
Texas	1,685,702	California	131,903
		Canada	2,450
		Colorado	53,730
		Delaware	1,886
		District of Columbia	8,949
		Florida	4,344
		Georgia	53,221
		Illinois	242,831
		Indiana	59,954
		Iowa	51,680
		Kansas	140,207
		Kentucky	48,175
		Louisiana	48,601
		Maryland	18,233
		Massachusetts	1,934
		Mexico	19,121
		Michigan	139,973
		Minnesota	39,124
		Mississippi	49,086
		Missouri	124,678
		Nebraska	25,304
		New Hampshire	3
		New Jersey	32,543
		New Mexico	25,862
		New York	113,753
		North Carolina	1,759
		Ohio	264,513
		Oklahoma	14,802
		Pennsylvania	223,282
		South Carolina	917
		South Dakota	3,637
		Tennessee	90,258
		Texas	54,090
		Virginia	12,858
		West Virginia	101,895
		Wisconsin	32,783
		Wyoming	1,218
Total	2,448,357		2,448,357
Mountain			
Arizona	-	Arizona	28,252
Colorado	6,385	California	111,846
Idaho	-	Colorado	1,048
Montana	4,619	Mexico	1,412
Nevada	-	Montana	9,985
New Mexico	156,231	Nebraska	781
Utah	-	New Mexico	6,709
Wyoming	33,902	North Dakota	3,661
		South Dakota	3,865
		Texas	6,964
		Utah	25,952
		Wyoming	662
Total	201,137		201,137
U. S. Total	3,242,777	U. S. Total	3,242,777

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[1] Includes exports to:

Mexico - 20,533
Canada - 3,630

SUMMARY OF NATURAL GAS STATISTICS, 1951

State	Production 1/		Consumption											Gas used at electric utility plants (millions of cu. ft.) 2/
			Residential			Commercial			Industrial					
	Millions of cu. ft.	Average value at wells per M cu. ft. (cents)	Thousands of consumers	Millions of cu. ft.	Average value at points of consumption per M cu. ft. (cents)	Thousands of consumers	Millions of cu. ft.	Average value at points of consumption per M cu. ft. (cents)	Field (drilling, pumping, etc.)		All other industrial			
									Millions of cu. ft.	Value at points of consumption (thousands of dollars)	Millions of cu. ft.		Value at points of consumption (thousands of dollars)	
											Fuel at petroleum refineries	Other including electric utility plants		
Alabama........	1	5.0	200	15,981	80.9	16	5,572	51.7	15	2	854	88,608	16,551	18,764
Arizona........	-	-	132	7,047	81.7	16	8,135	35.3	-	-	-	46,864	9,925	16,010
Arkansas.......	44,656	4.0	162	17,580	50.7	25	9,112	37.0	22,745	1,415	10,336	3/ 95,751	10,635	28,601
California.....	566,751	14.6	2,870	196,819	67.8	201	72,676	45.5	158,050	22,448	77,764	3/ 282,539	87,756	83,141
Colorado.......	14,128	4.3	193	27,166	56.0	26	13,958	46.7	6,802	285	1,700	53,143	8,450	22,725
Del., D.C., & Md.	3,422	20.0	586	24,772	137.8	45	5,408	127.5	51	10	-	5,638	4,332	3
Florida........	10	7.3	14	1,124	81.4	(4/)	208	26.0	10	1	-	11,702	1,758	5,505
Georgia........	-	-	196	19,314	66.0	20	8,613	38.1	-	-	-	66,669	12,977	42,244
Illinois.......	11,425	15.3	1,648	71,056	94.1	94	18,651	65.9	11,780	1,333	5,526	143,799	40,237	30,865
Indiana........	845	9.8	554	23,113	108.0	37	6,415	88.4	133	9	518	38,998	13,848	774
Iowa...........	-	-	228	22,627	76.3	22	9,919	55.8	-	-	-	47,094	10,427	20,314
Kansas.........	417,538	8.1	368	51,563	47.3	42	24,153	33.3	30,475	2,478	12,491	3/ 160,210	24,531	42,780
Kentucky.......	76,097	21.7	266	32,022	57.8	29	9,167	49.6	5,133	1,094	2,592	25,472	7,422	2,241
Louisiana......	1,054,199	5.8	420	28,365	59.6	40	12,145	32.8	174,783	9,818	91,450	3/ 242,562	35,533	65,925
Mass. & N. H...	-	-	267	1,118	279.3	12	298	237.9	-	-	-	370	852	-
Michigan.......	11,194	14.8	1,074	99,307	83.9	61	13,272	75.9	1,747	289	102	39,855	21,248	141
Minnesota......	-	-	286	31,970	69.3	15	5,932	49.0	-	-	-	46,303	11,016	24,009
Mississippi....	158,845	6.3	154	12,778	68.3	21	6,875	40.2	11,825	1,001	691	65,617	8,651	26,580
Missouri.......	14	14.3	572	62,598	67.5	44	16,718	45.4	12	2	2,347	75,247	17,548	15,949
Montana........	36,424	5.5	84	12,355	51.0	8	7,420	35.1	1,365	130	2,970	13,371	2,698	889
Nebraska.......	3,895	12.8	182	22,333	66.6	18	10,894	44.8	421	54	254	38,484	8,129	14,894
New Jersey.....	-	-	1,177	15,818	276.5	75	3,293	203.7	-	-	-	11,776	4,793	6,129
New Mexico.....	300,169	3.8	90	9,338	67.3	9	7,351	34.2	68,710	2,784	4,407	3/ 85,002	7,571	15,411
New York.......	3,214	25.1	3,428	89,177	127.7	185	17,650	121.4	250	84	51	37,792	17,870	20,865
N.C., S.C......	-	-	10	78	156.4	1	56	144.6	-	-	-	2,350	211	-
N.D., S.D......	463	5.1	38	5,178	72.1	5	3,687	48.5	-	-	-	5,990	1,629	3,521
Ohio...........	38,879	20.2	1,586	206,058	60.0	127	44,954	56.1	817	167	357	123,634	50,169	2,453
Oklahoma.......	538,756	5.3	431	45,156	45.3	48	22,364	28.9	126,756	6,276	36,656	3/ 76,955	13,432	41,153
Pennsylvania...	128,715	27.7	1,688	131,365	79.8	112	25,097	65.1	4,277	1,314	9,932	141,266	59,653	9,742
Tennessee......	132	9.4	160	15,699	72.3	21	7,027	55.8	-	-	-	65,352	11,224	7,500
Texas..........	3,781,136	5.4	1,386	96,297	62.6	161	43,511	40.0	774,443	40,359	270,123	3/ 946,003	102,785	193,616
Utah & Wyo.....	75,241	7.4	123	15,339	50.5	16	7,603	40.3	18,145	1,329	5,046	21,746	5,361	830
Virginia.......	64	15.6	220	7,839	138.9	16	2,522	100.9	25	6	-	4,467	1,361	150
West Virginia..	191,146	18.6	275	39,343	42.8	27	10,668	38.1	23,100	4,741	1,607	64,890	19,164	95
Wisconsin......	-	-	376	17,032	136.9	19	2,985	119.6	-	-	-	8,365	5,030	79
Total: 1951...	7,457,359	7.3	21,444	1,474,725	76.0	1,614	464,309	52.9	1,441,870	97,429	537,774	3/ 3,183,884	654,777	763,898
1950...	6,282,060	6.5	16,906	1,198,369	69.0	1,347	387,838	47.6	1,187,473	73,301	455,096	2,797,628	519,917	628,919

1/ Includes gas stored and lost in transmission.
2/ Federal Power Commission: Includes gas other than natural, impossible to segregate and therefore shown separately from main table.
3/ Includes gas used in production of carbon black: Louisiana, 22,192 MMcf; Texas, 322,287 MMcf; U.S. total, 426,423 MMcf. Quantities for other states cannot be disclosed.
4/ Less than 500.

GROSS PRODUCTION AND DISPOSITION OF NATURAL GAS IN THE UNITED STATES, BY STATES, IN 1951
IN MILLIONS OF CUBIC FEET

State	Estimated production 1/			Estimated disposition		
	From gas wells	From oil wells	Total	Marketed production 2/	Repressuring	Vented and wasted 3/
Arkansas.........	37,060	30,050	67,110	44,656	18,911	3,543
California.......	200,200	611,800	812,000	566,751	239,955	5,294
Colorado.........	10,400	16,600	27,000	14,128	1,866	11,006
Illinois.........	500	43,300	43,800	11,425	1,394	30,981
Indiana..........	200	6,400	6,600	845	70	5,685
Kansas...........	379,500	80,700	460,200	417,538	1,401	41,261
Kentucky.........	73,100	5,000	78,100	76,097	-	2,003
Louisiana........	1,088,900	302,700	1,391,600	1,054,199	202,383	135,018
Maryland.........	3,422	-	3,422	3,422	-	-
Michigan.........	10,000	5,300	15,300	11,194	672	3,434
Mississippi......	175,500	83,400	258,900	158,845	41,718	58,337
Montana..........	34,000	3,100	37,100	36,424	384	292
Nebraska.........	3,100	900	4,000	3,895	-	105
New Mexico.......	120,600	208,500	329,100	300,169	5,105	23,826
New York.........	3,100	150	3,250	3,214	-	36
Ohio.............	40,000	1,500	41,500	38,879	12	2,609
Oklahoma.........	420,000	338,000	758,000	538,756	57,119	162,125
Pennsylvania.....	126,000	3,100	129,100	128,715	260	125
Texas............	3,518,500	1,411,600	4,930,100	3,781,136	856,930	292,034
Utah.............	3,690	160	3,850	3,733	-	117
West Virginia....	188,000	5,000	193,000	191,146	373	1,481
Wyoming..........	45,000	50,600	95,600	71,508	10,274	13,818
Other States 4/..	680	60	740	684	-	56
Total 1951.....	6,481,452	3,207,920	9,689,372	7,457,359	1,438,827	793,186
Total 1950.....	5,603,200	2,876,450	8,479,650	6,282,060	1,396,546	801,044

1/ Marketed production plus quantities used in repressuring, vented, and wasted.
2/ Includes gas utilized, stored and lost in transmission.
3/ Partly estimated. Includes direct waste on producing properties and residue blown to the air.
4/ Alabama, Florida, Missouri, North Dakota, South Dakota, Tennessee, and Virginia.

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UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary   J. J. FORBES, Director

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MINERAL MARKET REPORT
MMS NO. 2100

NEW RECORDS ESTABLISHED IN 1951 BY THE PERLITE INDUSTRY

Virtually unknown on a commercial basis prior to World War II production of expanded perlite in 1951 was 33 times greater than in 1946. Total output of expanded perlite in 1951 reached 134,175 short tons, and the quantity of expanded perlite sold or used was 133, 175 short tons, valued at $7,243,298. The quantity of crude rock sold or used by producers was 181,588 short tons, valued at $809,971. The difference between the quantity of crude sold or used at own plant and the quantity of expanded material sold is accounted for by losses in transit, unexpandable material in the furnace feed, unsalable fines produced, stocks in transit or in storage, and the loss of moisture weight during furnacing.

In 1951 active mines were located in 7 western States, with deposits in Nevada, New Mexico and Colorado furnishing 87 percent of the total requirements of crude rock.

In 1951 perlite processing plants were located in 27 States throughout the United States. California led in number of plants with 11, followed by Illinois and Texas with 5 each, and Pennsylvania and Utah with 4 each. One or 2 plants were located in each of 22 other States. Some 10 or 12 additional plants are reported to be under construction. As shown in Table 2, the greatest quantity of expanded perlite was produced and sold by firms in California, while large quantities were also produced and sold in Pennsylvania, Illinois, New Jersey, Oregon, Ohio and Texas.

The average value of expanded perlite in 1951 was $54.39 per short ton - slightly lower than the $54.52 per short ton shown for 1950. In general, the average value increased in the western States and declined in the eastern States.

Bureau of Mines statistics covering production and sales of crude and expanded perlite are given in Table 1. Table 2 shows a State and sectional breakdown for the production of expanded perlite in the years 1950 and 1951. The remarkable growth of this industry is indicated by the figures in these tables.

Prepared by Oliver S. North and A. L. Marks under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division

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Interior Duplicating Section, Washington,
D. C.

Table 1.- Crude and expanded perlite produced and sold or used by producers in the United States, 1947-51.

Year	Crude perlite					Expanded perlite		
	Produced	Sold		Used at own plant to make expanded material		Produced	Sold	
	Short tons	Short tons	Value	Short tons	Value	Short tons	Short tons	Value
1947	10,500	550	$3,000	9,900	$55,000	9,700	7,700	$271,000
1948	22,200	4,400	29,000	17,700	105,000	21,200	18,600	742,000
1949	71,500	27,300	193,000	43,800	317,000	58,100	52,200	2,385,000
1950	110,694	59,802	411,205	41,734	237,957	88,892	86,962	4,741,383
1951	182,260	138,205	615,853	43,383	194,118	134,479	133,175	7,243,298

Table 2.- Expanded perlite produced and sold by producers in the United States, 1950-51, by States

State	1950				1951			
	Produced	Sold			Produced	Sold		
	(Short tons)	Short tons	Value	Ave. per ton	(Short tons)	Short tons	Value	Ave. per ton
California..........	20,363	20,179	$1,088,879	$53.96	25,850	25,648	$1,481,428	$57.76
Illinois............	11,690	11,690	694,000	59.37	11,978	11,967	692,073	57.83
Pennsylvania........	3,743	3,653	237,000	64.88	12,446	12,389	757,060	61.11
Texas...............	2,314	2,185	106,323	48.66	9,044	8,698	423,730	48.72
Other Western States 1/	27,698	26,481	1,121,530	42.35	32,640	32,584	1,467,831	45.05
Other Eastern States 2/	23,084	22,774	1,493,651	65.59	42,521	41,889	2,421,176	57.80
Total............	88,892	86,962	$4,741,383	$54.52	134,479	133,175	$7,243,298	$54.39

1/ Includes Arizona, Arkansas, Colorado, Iowa (1951 only), Kansas, Louisiana, Minnesota, Missouri, Nevada, New Mexico, Oklahoma, Oregon, and Utah.

2/ Includes Indiana, Maryland (1951 only), Michigan, New Jersey, New York, North Carolina, Ohio, Tennessee, Virginia, and Wisconsin.

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MINERALS MARKET REPORT
MMS No. 2101

TIN CONSUMPTION IN THE UNITED STATES IN 1951

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

The consumption of primary and secondary tin in the United States decreased 16 percent in 1951, according to the Bureau of Mines, United States Department of the Interior. The tin content of manufactured products was 88,169 long tons in 1951 compared with 104,464 tons in 1950. The tin plate and terneplate industry decreased its use of tin 14 percent, while the total quantity used by all other industries decreased 16 percent. Tin controls were in effect. NPA Order M-8 limited monthly use and inventories, and on May 1 placed tin supplies under allocation.

Five items - tin plate and terneplate, bronze and brass, solder, babbitt, and tinning accounted for most of the tin consumed in 1950 and 1951. Tin plate and terneplate took 35 percent (same in 1950), bronze and brass 25 percent (20 percent in 1950), solder 22 percent (26 percent in 1950), babbitt 6 percent and tinning 3 percent. Uses of primary tin decreased in 1951 as follows: tin plate 14 percent, solder and babbitt 29 percent, tinning 13 percent, collapsible tubes and foil 42 percent, pipe and tubing 65 percent, type metal 35 percent, and chemicals and oxide 57 percent. Bronze and brass was the only item that increased (16 percent) its use of primary tin.

Net industrial receipts of tin in 1951 were 81,139 long tons (30 percent less than in 1950) of which 60 percent consisted of primary pig tin. Receipts of primary tin decreased 40 percent, and secondary or scrap 7 percent. Straits tin accounted for 68 percent of primary receipts in 1950 and only 25 percent in 1951, as virtually no tin was shipped from Malaya to the United States after March. The principal brand acquired in 1951 was Longhorn produced by the Texas City smelter, which has supplied industry almost half of its pig tin since 1942. Straits, the product of the large smelters in Malaya, was the principal brand used in the United States prior to the second World War.

Industrial plant stocks of pig tin at the end of 1951 were the lowest in 16 years or since the end of 1935. About half of the industrial inventories was at tin plate plants. Tin platers reduced their stock of pig tin from 15,116 tons at the beginning of the year to 5,631 tons at the end of the year.

Prepared October 8, 1952 by Abbott Renick and John B. Umhau under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Consumption of primary and secondary tin in the United States,
1948-51, in long tons

	1948			1949			1950			1951		
	Tin Plate & Terne Plate	Other	Total	Tin Plate & Terne Plate	Other	Total	Tin Plate & Terne Plate	Other	Total	Tin Plate & Terne Plate	Other	Total
Stocks on hand Jan. 1 1/	10,752	14,991	25,743	11,980	15,090	27,070	13,485	11,136	24,621	19,836	12,020	31,856
Net receipts during year												
Primary	34,213	27,906	62,119	32,583	15,199	47,782	43,667	36,325	79,992	22,841	25,457	48,298
Secondary...........	...	3,004	3,004	...	2,606	2,606	...	3,371	3,371	...	3,273	3,273
Terne metal.........	681	...	681	470	...	470	997	...	997	594	...	594
Scrap...............	...	29,840	29,840	...	22,193	22,193	...	30,839	30,839	...	28,974	28,974
Total receipts....	34,894	60,750	95,644	33,053	39,998	73,051	44,664	70,535	115,199	23,435	57,704	81,139
Available...............	45,646	75,741	121,387	45,033	55,038	100,121	58,149	81,671	139,820	43,271	69,724	112,995
Stocks on hand Dec.31 1/	11,980	15,090	27,070	13,485	11,136	24,621	19,836	12,020	31,856	10,269	10,495	20,764
Total processed during yr.	33,666	60,651	94,317	31,548	43,952	75,500	38,313	69,651	107,964	33,002	59,229	92,231
Intercompany transactions in scrap..............	885	1,650	2,535	591	1,576	2,167	905	1,263	2,168	830	1,896	2,726
Total consumed in manufacturing..............	32,781	59,001	91,782	30,957	42,376	73,333	37,408	68,388	105,796	32,172	57,333	89,505
Plant losses	471	523	994	570	357	927	775	557	1,332	742	594	1,336
Tin content of mfg'd products..............	32,310	58,478	90,788	30,387	42,019	72,406	36,633	67,831	104,464	31,430	56,739	88,169
Primary tin..........	2/32,058	27,805	59,863	3/30,039	17,124	47,163	4/36,030	35,161	71,191	5/30,747	26,137	56,884
Secondary tin.......	6/ 252	30,673	30,925	6/ 348	24,895	25,243	6/ 603	32,670	33,273	6/ 683	30,602	31,285

1/ Stocks shown exclude tin in transit or in other warehouses on January 1, as follows: 1948, 940 tons; 1949, 328; 1950, 61; 1951, 1,335; and 1952, 971.

2/ Includes 31,503 tons in tin plate, 420 tons in terneplate, and 135 tons in other products.

3/ Includes 29,617 tons in tin plate, 278 tons in terneplate and 144 tons in other products.

4/ Includes 35,380 tons in tin plate, 349 in terneplate and 301 tons in other products.

5/ Includes 30,522 tons in tin plate, 84 in terneplate and 141 tons in other products.

6/ Tin content of terne metal.

Consumer receipts of primary tin, by brands
1939 - 1951 in long tons

BRANDS	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Longhorn	-	-	-	1/ 1,238	12,600	25,540	39,575	48,745	37,657	24,664	13,369	4,912	20,263
Straits	48,677	82,980	88,213	21,105	5,951	7,560	4,157	1,244	11,144	20,492	14,874	54,350	12,163
Katanga	1,902	530	6,589	3,334	14,983	13,182	6,935	677	2,884	7,752	8,435	5,661	4,602
Banka	3,540	6,333	5,238	2,899	4,524	6,717	857	588	2,856	2,888	3,491	1,273	6,159
Chinese	3,407	3,154	4,594	1,428	1,700	1,730	2,303	1,000	636	962	3,310	1,500	352
English	8,347	3,034	3,783	177	189	53	2/	2/	2/	2/	2/	5,172	1,406
Others	4,859	2,094	5,864	2,945	601	541	836	4,349	4,705	5,361	4,303	7,124	3,353
Total	70,732	98,125	114,281	33,126	40,548	55,323	54,663	56,603	59,882	62,119	47,782	79,992	48,298

1/ First shipments made in June 1942.
2/ Included in others - not separately reported.

Stocks of tin held at industrial plants December 31, 1948 - 1951
in long tons

Raw material	December 31, 1948			December 31, 1949			December 31, 1950			December 31, 1951		
	Tin Plate	Others	Total	Tin Plate	Others	Total	Tin Plate	Others	Total	Tin Plate	Others	Total
Pig tin:			1/			2/			3/			4/
Primary	7,824	6,525	14,349	9,300	4,471	13,771	15,116	5,460	20,576	5,631	4,412	10,043
Secondary	...	475	475	...	230	230	...	230	230	...	341	341
Terne Metal 5/	200	...	200	85	...	85	222		222	110		110
Scrap 5/	170	5,638	5,808	276	4,254	4,530	257	4,485	4,742	252	4,011	4,263
In process 5/	3,786	2,452	6,238	3,824	2,181	6,005	4,241	1,845	6,086	4,276	1,731	6,007
Total	11,980	15,090	27,070	13,485	11,136	24,621	19,836	12,020	31,356	10,269	10,495	20,764

1/ Not including 328 tons in transit or in warehouses.
2/ Not including 61 tons in transit or in warehouses.
3/ Not including 1,355 tons in transit or in warehouses.
4/ Not including 971 tons in transit or in warehouses.
5/ Tin content.

Consumption of tin in the United States, 1948-51, by finished products, in long tons of contained tin

Product	1948			1949			1950			1951		
	Primary	Secondary	Total	Primary	Secondary	Total	Primary	Secondary	Total	Primary	Secondary	Total
Tin plate	31,503	...	31,503	29,617	...	29,617	35,380	...	35,380	30,522	...	30,522
Terneplate	420	252	672	278	348	626	349	603	952	84	683	767
Solder	15,038	6,087	21,125	8,150	7,206	15,356	18,343	9,117	27,460	13,066	6,744	19,810
Babbitt	3,507	3,546	7,053	2,030	2,515	4,545	3,501	2,908	6,409	2,493	3,360	5,853
Bronze and brass	3,952	17,739	21,691	2,360	12,103	14,463	4,178	16,416	20,594	4,838	16,934	21,772
Collapsible tubes	600	39	639	672	43	715	1/1,438	1/ 228	1/1,666	1/ 832	1/ 208	1/1,040
Tinning	2,298	223	2,521	1,916	158	2,074	2,797	179	2,976	2,431	277	2,708
Foil	179	60	239	161	38	199	2/	2/	2/	2/	2/	2/
Pipe and tubing	257	66	323	193	38	231	383	57	440	133	94	227
Type metal	129	1,787	1,916	81	1,693	1,774	184	1,796	1,980	120	1,694	1,814
Bar tin	916	132	1,048	636	159	795	1,194	240	1,434	875	54	929
Miscellaneous alloys	170	211	381	245	145	390	3/1,543	164	1,707	3/ 844	183	1,027
White metal	39	150	189	146	107	253	693	524	1,217	134	146	280
Chemicals (other than oxide)	855	633	1,488	64	390	454	869	847	1,716	95	707	802
Tin oxide				270	237	507				279	119	398
Miscellaneous				344	63	407	339	194	533	138	82	220
Total	59,863	30,925	90,788	47,163	25,243	72,406	71,191	33,273	104,464	56,884	31,285	88,169

1/ Includes foil.

2/ Combined with collapsible tubes.

3/ Includes 788 tons of tin in Copan produced in 1950, and 592 tons in 1951.

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BITUMINOUS COAL AND LIGNITE IN 1951

GENERAL SUMMARY

The purpose of this interim report is to make available, as soon as possible after completion of the annual canvass, the final figures on the bituminous-coal industry for the calendar year 1951. The Minerals Yearbook, 1951, will carry final figures for 1950 and 1951.

Production. - The output of soft coal in 1951 - 533,664,732 tons 1/ - was 3 percent higher than the 516,311,053 tons produced in 1950. The smaller amount of time lost by strikes in 1951 compared to 1950 largely explains the increase. According to the Bureau of Labor Statistics, 887,000 man-days were lost on account of strikes in 1951 compared to 9,320,000 man-days in 1950.

There was practically no seasonal decline in production in 1951, owing largely to increased exports to Europe. Throughout most of the year production exceeded 10,000,000 tons per week, except when output was reduced because of holidays. The man-days lost by strike was the lowest since 1942.

Trend of Employment. - The average number of men working daily at bituminous-coal and lignite mines in 1951 decreased to 372,897 from 415,582 in 1950.

Index to Capacity. - As it is not possible for all mines to operate every working day in the year, a conservative figure of 280 days for calculating potential capacity was suggested some years ago by the coal committee of the American Institute of Mining and Metallurgical Engineers. (See Minerals Yearbook, 1935, pp. 631-632.) The average output per day worked in 1951 was 2,628,890 tons, which (if applied to 280 days) gives an annual potential output of 736,000,000 tons compared with the actual production of 533,664,732.

Mechanization. - More coal was loaded mechanically at underground mines in the United States in 1951 than in 1950. Also, the percentage mechanically loaded increased from 69 percent of the total underground output in 1950 to 73 percent in 1951. Sales of underground loading equipment, in terms of capacity, were approximately the same in 1951 as in 1950.

Mechanical Cleaning. - The total capacity of mechanical-cleaning equipment sold for use at bituminous-coal mines in 1950 was estimated at 13,900 tons of cleaned coal per hour, a 14-percent increase over the previous year.

1/ Throughout this chapter, "tons" refers to net tons of 2,000 pounds, except that the world table is in metric tons of about 2,205 pounds.

Consumption. - Seven classes of consumers used more coal in 1951 than in 1950, while two classes decreased their consumption. The total consumption in 1951 was approximately 14,702,000 tons more than in 1950. Table 49 shows trends in consumption for the major classes of consumers.

Trends of Fuel Efficiency. - During 1951 electric public-utility power plants attained increased fuel efficiency.

Competition With Oil and Gas. - Soon after World War II, increased competition developed among the fuels, with numerous reports of conversion from coal to fuel oil and gas.

Electric-power utilities consumed 15 percent more bituminous coal, 15 percent less fuel oil, and 21 percent more gas in 1951 than in 1950.

Class I railroads decreased their consumption of coal 11 percent in 1951 from 1950 and increased their purchases of fuel oil and Diesel oil 5 percent during the same period.

The manufacture of domestic coal-burning equipment is reflected in statistics published by the Bureau of the Census. Factory sales of domestic stokers for burning bituminous coal decreased from 13,102 (revised figure) in 1950 to 12,386 in 1951. Shipments of domestic oil burners, boiler-burner units, and furnace-burner units decreased from 879,922 (revised figure) in 1950 to 658,714 in 1951.

Stocks. - The reserve supply of bituminous coal and lignite in the hands of industrial consumers and retail coalyards increased from 72,516,000 tons at the beginning of 1951 to 76,636,000 tons at the close. The days' supply of stocks increased from 50 to 56. Stocks on the upper Lake docks decreased 664,106 tons from January 1 to December 31, 1951.

TABLE 1.--Salient statistics of the bituminous-coal and lignite industry in the United States and Alaska, 1950-51

(All tonnage figures represent net tons of marketable coal and excludes washery and other refuse)

	1950	1951	Change from 1950 (percent)
Production	516,311,053	533,664,732	+ 3.4
Consumption in the United States	454,202,000	468,904,000	+ 3.2
Stocks at end of year:			
Industrial consumers and retail yards	72,516,000	76,636,000	+ 5.7
Stocks on upper Lake docks	6,206,997	5,542,891	- 10.7
Imports and Exports: 1/			
Imports	346,706	291,536	- 15.9
Exports	25,468,403	56,726,155	+122.7
Price indicators (average per net ton):			
Average cost of railroad fuel purchased, f.o.b. mines 2/	$4.49	$4.54	+ 1.1
Average cost of coking coal at merchant coke ovens	$9.39	$9.51	+ 1.3
Average retail price 3/	$16.48	$16.87	+ 2.4
Average railroad freight charge per net ton 2/	$3.09	$3.16	+ 2.3
Average value f.o.b. mines	$4.84	$4.92	+ 1.7
Underground loading machinery sold:			
Mobile loading machines (number)	289	287	- 0.7
Scrapers (number)	1	4	+300.0
Conveyors, including those equipped with duckbills (units)	316	297	- 6.0
"Mother" conveyors (units)	132	114	- 13.6
Surface stripping	123,466,564	117,617,676	- 4.7
Mechanically loaded underground	272,724,612	304,255,921	+ 11.6
Mechanically cleaned	198,698,518	240,009,808	+ 20.8
Number of mines	9,429	8,009	- 15.1
Average number of days worked	183	203	+ 10.9
Average number of men working daily	415,582	372,897	- 10.3
Production per man per day	6.77	7.04	+ 4.0
Fuel efficiency indicator:			
Pounds of coal per kw.-hr. at electric power plants 4/	1.19	1.14	- 4.2

1/ U. S. Department of Commerce.
2/ Interstate Commerce Commission.
3/ Bureau of Labor Statistics, U. S. Department of Labor.
4/ Federal Power Commission.

SOURCES OF DATA

Data for 1951 are final and are based upon detailed annual reports of production and mine operation furnished by the producers. As in previous years, all but a small percentage of the output was covered by the reports submitted. For the remaining output not directly reported - consisting chiefly of small mines - it has been possible to obtain reasonably accurate data from the records of the State mine departments, which have statutory authority to require such reports, or, in a few instances, from railroad carloadings. Production includes all marketable coal and excludes washery and other refuse.

In accordance with the practice followed by the Bureau of Mines in previous years, the statistics in this report relate to mines having an output of 1,000 tons a year or more and do not attempt to include many small mines producing less than 1,000 tons a year.

As in previous years, these data include all coal produced in Alaska and all that produced in the United States except Pennsylvania anthracite.

RESERVES 2/

TABLE 2.--Coal reserves of the United States, Jan. 1, 1950, by States

(In thousands of short tons)

State	Estimated original reserves					Reserves depleted to Jan. 1, 1950		Remaining reserves, Jan. 1, 1950	Recoverable reserves, Jan. 1, 1950, assuming 50-percent recovery
	Bituminous coal	Subbituminous coal	Lignite	Anthracite and semi-anthracite	Total	Produced 1/	Produced and lost in mining, assuming past losses equal production		
Alabama --------	67,570,000	---	---	---	67,570,000	821,590	1,643,180	65,926,820	32,963,410
Arkansas -------	1,396,000	---	90,000	230,000	1,716,000	91,894	183,788	1,532,212	766,106
Colorado -------	213,071,000	104,175,000	---	100,000	317,346,000	471,146	942,292	316,403,708	158,201,854
Georgia --------	933,000	---	---	---	933,000	11,533	23,066	909,934	454,967
Illinois -------	171,905,000	---	---	---	171,905,000	3,131,997	6,263,994	165,641,006	82,820,503
Indiana --------	53,051,000	---	---	---	53,051,000	984,137	1,968,274	51,082,726	25,541,363
Iowa -----------	29,160,000	---	---	---	29,160,000	343,162	686,324	28,473,676	14,236,838
Kansas ---------	2/ 17,574,000	---	---	---	2/17,574,000	3/ 9,800	3/ 19,600	17,554,400	8,777,200
Kentucky -------	123,327,000	---	---	---	123,327,000	1,951,803	3,903,606	119,423,394	59,711,697
Maryland -------	8,043,000	---	---	---	8,043,000	259,943	519,886	7,523,114	3,761,557
Michigan -------	296,900	---	---	---	296,900	4/ 46,240	5/ 77,000	219,900	109,950
Missouri -------	79,362,016	---	---	---	79,362,016	257,787	515,574	78,846,442	39,423,221
Montana --------	2,362,610	132,151,060	87,533,270	---	222,046,940	157,248	314,496	221,732,444	110,866,222
New Mexico -----	10,947,700	50,801,200	---	5,700	61,754,600	121,507	243,014	61,511,586	30,755,793
North Carolina -	110,462	---	---	---	110,462	1,054	2,108	108,354	54,177
North Dakota ---	---	---	600,000,000	---	600,000,000	67,856	135,712	599,864,288	299,932,144
Ohio -----------	86,497,000	---	---	---	86,497,000	1,694,259	3,388,518	83,108,482	41,554,241
Oklahoma -------	54,951,000	---	---	---	54,951,000	158,846	317,692	54,633,308	27,316,654
Pennsylvania ---	75,093,459	---	---	22,805,000	97,898,459	12,332,962	24,665,924	73,232,535	36,616,268
South Dakota ---	---	---	1,020,000	---	1,020,000	921	1,842	1,018,158	509,079
Tennessee ------	25,665,000	---	---	---	25,665,000	324,718	649,436	25,015,564	12,507,782
Texas ----------	8,000,000	---	23,000,000	---	31,000,000	62,047	124,094	30,875,906	15,437,953
Utah -----------	88,184,000	5,156,000	---	---	93,340,000	198,665	397,330	92,942,670	46,471,335
Virginia -------	21,149,000	---	---	500,000	21,649,000	548,479	1,096,958	20,552,042	10,276,021
Washington -----	11,413,000	52,442,000	---	23,000	63,878,000	142,904	285,808	63,592,192	31,796,096
West Virginia --	116,618,447	---	---	---	116,618,447	4,979,385	9,958,770	106,659,677	53,329,838
Wyoming --------	13,234,950	6/108,318,900	6/ ---	---	121,553,850	362,375	724,750	120,829,100	60,414,550
Other States ---	7/ 820,000	8/ 15,500,000	9/ 49,963	---	16,369,963	8,789	17,578	16,352,385	8,176,193
Total -----	1,280,735,544	468,544,160	711,693,233	23,663,700	2,484,636,637	29,543,047	59,070,614	2,425,566,023	1,212,783,012

1/ Production, 1800 through 1885, from Eavenson, H. N., The First Century and a Quarter of American Coal Industry: 1942, 701 pp., production, 1886 through 1949, from Geological Survey Mineral Resources of the United States and Bureau of Mines Minerals Yearbooks, unless otherwise indicated.
2/ Remaining reserves, Jan. 1, 1946.
3/ Production, Jan. 1, 1946 to Jan. 1, 1950.
4/ Michigan Geological Survey Division, as cited in Geol. Circular 77, 1950, p. 56.
5/ Past losses assumed to be 40 percent of coal originally in the ground.
6/ Small reserves of lignite included under subbituminous coal.
7/ Includes Arizona, California, Idaho, and Oregon.
8/ Includes Arizona, California, and Oregon.
9/ Includes California and Louisiana.

2/ Averitt, Paul, and Berryhill, Louise R., Coal Resources of the United States: Geol. Survey Circ. 94, 1950, p.5.

DOMESTIC PRODUCTION

The trend of average production of bituminous coal and lignite per working day in 1942-51 is illustrated in figures 1 and 5.

Production statistics for lignite are shown separately from bituminous coal in table 53.

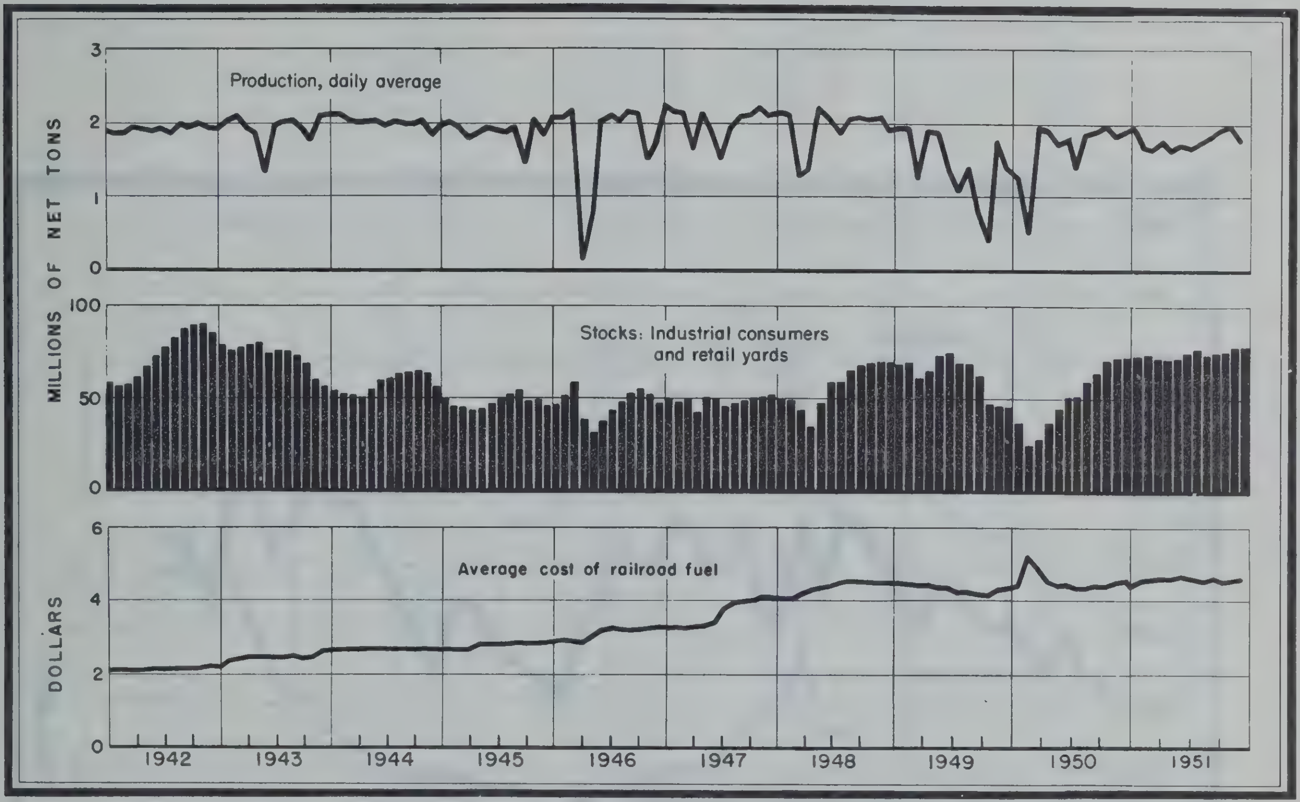

Figure 1.--Trends of production, stocks, and prices of bituminous coal and lignite in the United States, 1942-51.

Production, realization, capacity, and net income of bituminous-coal and lignite mines in 1905-51 are shown graphically in figure 2.

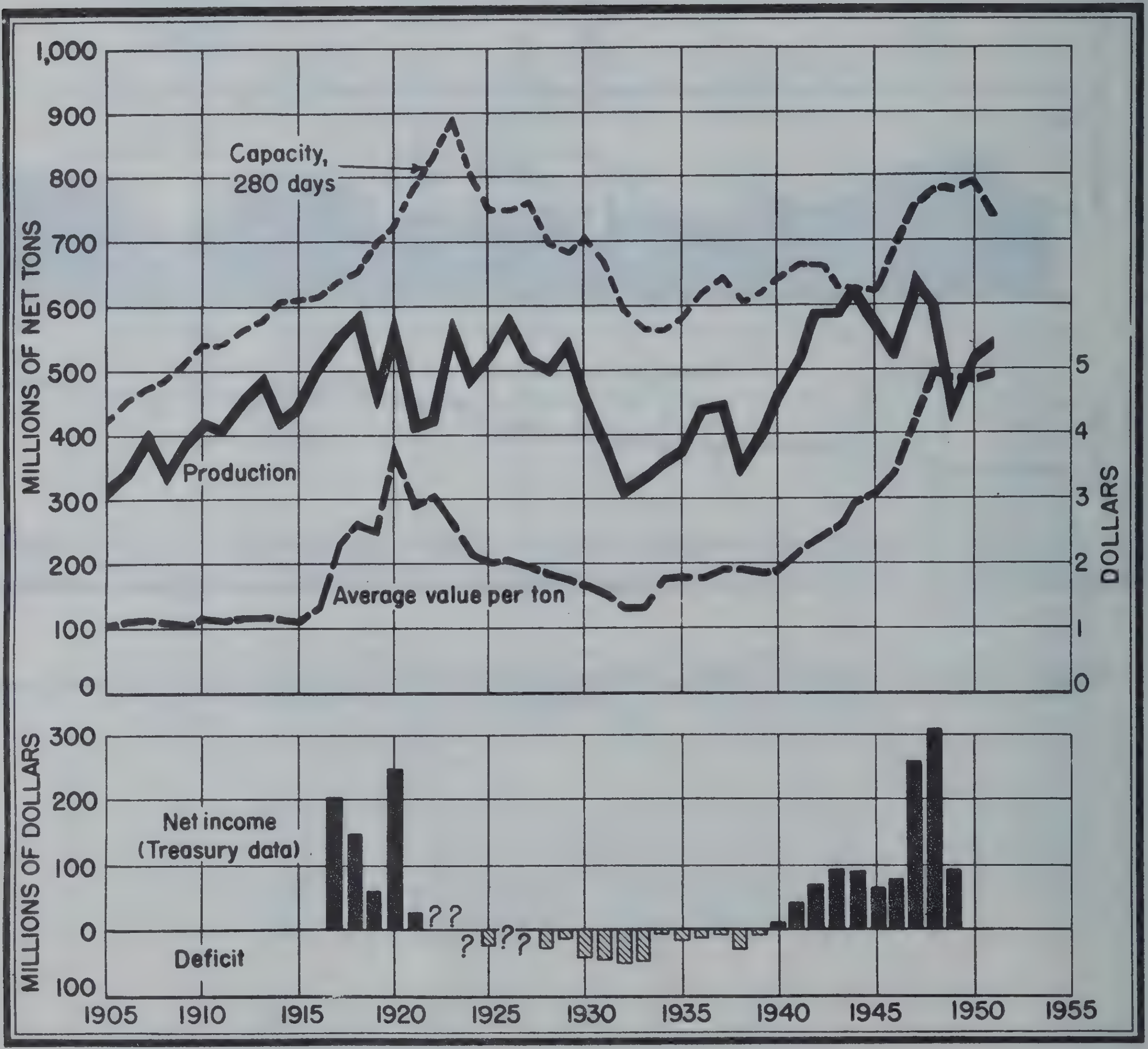

Figure 2.--Trends of bituminous-coal and lignite production, realization, mine capacity, and net income or deficit in the United States, 1905-51.

TABLE 3.--Growth of the bituminous-coal and lignite-mining industry in the United States, 1890-1951

Year	Production (net tons)	Value of production 1/		Number of mines	Capacity at 280 days (millions of tons)
		Total	Average per ton		
1890	111,302,322	$ 110,420,801	$ 0.99	(2)	137
1891	117,901,238	117,188,400	.99	(2)	148
1892	126,856,567	125,124,381	.99	(2)	162
1893	128,385,231	122,751,618	.96	(2)	174
1894	118,820,405	107,653,501	.91	(2)	196
1895	135,118,193	115,779,771	.86	2,555	196
1896	137,640,276	114,891,515	.83	2,599	202
1897	147,617,519	119,595,224	.81	2,454	213
1898	166,593,623	132,608,713	.80	2,862	221
1899	193,323,187	167,952,104	.87	3,245	230
1900	212,316,112	220,930,313	1.04	(2)	255
1901	225,828,149	236,422,049	1.05	(2)	281
1902	260,216,844	290,858,483	1.12	(2)	316
1903	282,749,348	351,687,933	1.24	(2)	350
1904	278,659,689	305,397,001	1.10	4,650	386
1905	315,062,785	334,658,294	1.06	5,060	417
1906	342,874,867	381,162,115	1.11	4,430	451
1907	394,759,112	451,214,842	1.14	4,550	473
1908	332,573,944	374,135,268	1.12	4,730	482
1909	379,744,257	405,486,777	1.07	5,775	510
1910	417,111,142	469,281,719	1.12	5,818	538
1911	405,907,059	451,375,819	1.11	5,887	538
1912	450,104,982	517,983,445	1.15	5,747	566
1913	478,435,297	565,234,952	1.18	5,776	577
1914	422,703,970	493,309,244	1.17	5,592	608
1915	442,624,426	502,037,688	1.13	5,502	610
1916	502,519,682	665,116,077	1.32	5,726	613
1917	551,790,563	1,249,272,837	2.26	6,939	636
1918	579,385,820	1,491,809,940	2.58	8,319	650
1919	465,860,058	1,160,616,013	2.49	8,994	669
1920	568,666,683	2,129,933,000	3.75	8,921	725
1921	415,921,950	1,199,983,600	2.89	8,038	781
1922	422,268,099	1,274,820,000	3.02	9,299	832
1923	564,564,662	1,514,621,000	2.68	9,331	885
1924	483,686,538	1,062,626,000	2.20	7,586	792
1925	520,052,741	1,060,402,000	2.04	7,144	748
1926	573,366,985	1,183,412,000	2.06	7,177	747
1927	517,763,352	1,029,657,000	1.99	7,011	759
1928	500,744,970	933,774,000	1.86	6,450	691
1929	534,988,593	952,781,000	1.78	6,057	679
1930	467,526,299	795,483,000	1.70	5,891	700
1931	382,089,396	588,895,000	1.54	5,642	669
1932	309,709,872	406,677,000	1.31	5,427	594
1933	333,630,533	445,788,000	1.34	5,555	559
1934	359,368,022	628,383,000	1.75	6,258	565
1935	372,373,122	658,063,000	1.77	6,315	582
1936	439,087,903	770,955,000	1.76	6,875	618
1937	445,531,449	864,042,000	1.94	6,548	646
1938	348,544,764	678,653,000	1.95	5,777	602
1939	394,855,325	728,348,366	1.84	5,820	621
1940	460,771,500	879,327,227	1.91	6,324	639
1941	514,149,245	1,125,362,836	2.19	6,822	666
1942	582,692,937	1,373,090,608	2.36	6,972	663
1943	590,177,069	1,584,644,477	2.69	6,620	626
1944	619,576,240	1,810,900,542	2.92	6,928	624
1945	577,617,327	1,768,204,320	3.06	7,033	620
1946	533,922,068	1,835,539,476	3.44	7,333	699
1947	630,623,722	2,622,634,946	4.16	8,700	755
1948	599,518,229	3/ 2,993,267,021	4.99	9,079	774
1949	437,868,036	2,136,870,571	4.88	8,559	781
1950	516,311,053	2,500,373,779	4.84	9,429	790
1951	533,664,732	2,626,030,137	4.92	8,009	736

1/ Figures for 1890 to 1936 and 1939 exclude selling expense. Figures for 1937-38 and 1940-51 include selling expense.

2/ Data not available.

3/ Revised.

PRODUCTION BY MONTHS AND WEEKS

The following tables summarize the statistics of monthly and weekly production of bituminous coal and lignite. The estimates given are based upon the latest information available and differ in some instances from the current figures published in the Weekly Coal Reports.

TABLE 4.--Bituminous-coal and lignite production (final figures) in the United States in 1951, with estimates by months

Month	Production (net tons)	Maximum number of working days	Average production per working day (net tons)	Month	Production (net tons)	Maximum number of working days	Average production per working day (net tons)
January ----	51,531,000	26	1,982,000	July -------	34,007,000	20.2	1,684,000
February ---	39,990,000	24	1,666,000	August -----	47,072,000	27	1,743,000
March ------	44,713,000	27	1,656,000	September --	42,853,000	24	1,786,000
April ------	41,888,000	24.2	1,731,000	October ----	51,675,000	27	1,914,000
May --------	43,281,000	26.4	1,639,000	November ---	49,207,000	24.8	1,984,000
June -------	43,448,000	25.5	1,704,000	December ---	44,000,000	25	1,760,000
				Total ----	533,665,000	301.1	1,772,000

TABLE 5.--Coal production in the United States and Alaska in 1951, by States (final figures), with estimates by months, in thousands of net tons

(Totals for year are based on final complete returns from all operators known to have produced 1,000 tons and over per year. In most cases monthly apportionment is based on current records of railway carloadings and waterway shipments; in some States upon direct tonnage reports by operators to State mine departments)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Alabama	1,475	1,254	1,151	1,115	1,144	1,146	797	1,116	1,012	1,199	1,024	1,164	13,597
Alaska	48	39	40	42	34	34	28	45	44	38	60	42	494
Arkansas	125	94	82	63	59	64	56	102	109	127	118	108	1,107
Colorado	519	382	314	255	196	196	162	273	320	471	509	506	4,103
Illinois	5,978	4,657	4,684	4,248	3,948	4,265	3,024	4,319	4,232	5,126	5,237	4,482	54,200
Indiana	2,223	1,605	1,897	1,471	1,338	1,370	1,103	1,597	1,492	1,807	1,851	1,697	19,451
Iowa	187	180	179	121	86	74	91	105	107	146	170	184	1,630
Kansas	245	200	132	150	141	136	97	157	146	184	187	186	1,961
Kentucky:													
Eastern	4,829	3,662	3,832	3,799	4,500	4,517	3,569	4,945	4,492	5,481	5,019	4,437	53,082
Western	2,215	1,691	1,849	1,660	1,675	1,688	1,473	1,902	1,665	2,080	2,088	1,904	21,890
Total Kentucky	7,044	5,353	5,681	5,459	6,175	6,205	5,042	6,847	6,157	7,561	7,107	6,341	74,972
Maryland	81	64	57	40	44	52	26	41	44	53	45	42	589
Michigan	1	1	—	—	—	—	—	1	1	1	1	1	7
Missouri	407	333	221	251	235	227	163	263	245	307	305	312	3,269
Montana:													
Bituminous	193	197	235	186	181	146	117	195	173	234	251	202	2,310
Lignite	3	3	3	3	3	3	2	3	3	3	3	3	35
Total Montana	196	200	238	189	184	149	119	198	176	237	254	205	2,345
New Mexico	82	55	65	57	55	57	41	71	65	74	80	81	783
North Dakota (lignite)	354	286	257	206	171	158	162	211	251	422	404	342	3,224
Ohio	3,628	2,431	3,119	3,375	3,125	3,332	2,576	3,297	3,065	3,693	3,477	2,831	37,949
Oklahoma	252	189	162	128	118	130	111	204	221	255	238	215	2,223
Pennsylvania (bituminous)	10,276	8,941	9,685	8,616	8,919	8,933	6,779	9,439	8,489	10,157	9,378	8,552	108,164
Tennessee	594	413	422	411	454	470	288	432	381	536	527	473	5,401
Utah	629	366	417	342	390	445	318	615	564	617	717	716	6,136
Virginia	1,947	1,512	1,652	1,688	1,809	1,706	1,506	1,961	1,815	2,112	1,938	1,754	21,400
Washington	91	68	74	60	66	64	42	84	67	74	80	87	857
West Virginia	14,563	10,903	13,668	13,155	14,146	13,799	11,159	15,099	13,327	15,761	14,767	12,963	163,310
Wyoming	578	458	512	442	439	432	313	590	518	712	726	710	6,430
Other States:													
Arizona, Georgia, and North Carolina	5	3	2	2	2	2	2	2	2	3	3	3	31
California and South Dakota (lignite)	3	3	2	2	3	2	2	3	3	2	4	3	32
Total bituminous coal and lignite	51,531	39,990	44,713	41,888	43,281	43,448	34,007	47,072	42,853	51,675	49,207	44,000	533,665
Pennsylvania anthracite	4,316	3,621	2,244	2,675	3,723	3,848	2,847	3,612	3,267	4,675	4,129	3,713	42,670
Grand total 1951	55,847	43,611	46,957	44,563	47,004	47,296	36,854	50,684	46,120	56,350	53,336	47,713	576,335

TABLE 6.--Bituminous-coal and lignite production in the United States and Alaska, in 1951, by districts, (final figures) with estimates by months, in thousands of net tons

(Districts as defined in the Bituminous Coal Act of 1937, and modifications thereto)

(Totals for year are based on final complete returns from all operators known to have produced 1,000 tons and over per year. In most cases monthly apportionment is based on current records of railway carloadings and waterway shipments; in some States upon direct tonnage reports by operators to State mine departments)

District	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1. Eastern Pennsylvania --	4,595	3,885	4,203	3,625	3,821	3,881	3,263	3,972	3,718	4,403	4,081	3,673	47,120
2. Western Pennsylvania --	5,799	5,144	5,574	5,064	5,175	5,138	3,569	5,543	4,845	5,844	5,377	4,951	62,023
3. Northern West Virginia	4,322	2,875	4,074	3,848	3,885	3,915	3,236	4,090	3,476	4,276	4,130	3,584	45,711
4. Ohio ----------	3,628	2,431	3,119	3,375	3,125	3,332	2,576	3,297	3,065	3,693	3,477	2,831	37,949
5. Michigan ----------	1	1	—	—	—	—	—	1	1	1	1	1	7
6. Panhandle ----------	414	276	391	369	373	375	311	393	334	411	396	344	4,387
7. Southern Numbered 1 ----	4,752	3,733	4,451	4,308	4,790	4,554	3,673	5,116	4,585	5,343	4,939	4,384	54,628
8. Southern Numbered 2 ----	12,289	9,499	10,538	10,412	11,737	11,519	9,217	12,717	11,513	13,714	12,644	11,189	136,988
9. West Kentucky ----------	2,215	1,691	1,849	1,660	1,675	1,688	1,473	1,902	1,665	2,080	2,088	1,904	21,890
10. Illinois ----------	5,978	4,657	4,684	4,248	3,948	4,265	3,024	4,319	4,232	5,126	5,237	4,482	54,200
11. Indiana ----------	2,223	1,605	1,897	1,471	1,338	1,370	1,103	1,597	1,492	1,807	1,851	1,697	19,451
12. Iowa ----------	187	180	179	121	86	74	91	105	107	146	170	184	1,630
13. Southeastern ----------	1,598	1,339	1,238	1,200	1,237	1,243	857	1,204	1,091	1,310	1,133	1,262	14,712
14. Arkansas-Oklahoma ------	227	170	147	114	106	116	100	184	197	229	213	194	1,997
15. Southwestern ----------	802	646	450	478	447	441	327	542	524	644	635	627	6,563
16. Northern Colorado ------	170	127	94	67	39	26	19	32	76	129	158	170	1,107
17. Southern Colorado ------	416	300	273	234	202	216	176	299	297	403	416	402	3,634
18. New Mexico ----------	16	11	12	11	11	11	8	14	13	14	17	16	154
19. Wyoming ----------	578	458	512	442	439	432	313	590	518	712	726	710	6,430
20. Utah ----------	629	366	417	342	390	445	318	615	564	617	717	716	6,136
21. North-South Dakota ----	357	289	259	208	173	160	164	213	253	424	407	345	3,252
22. Montana ----------	196	200	238	189	184	149	119	198	176	237	254	205	2,345
23. Washington ----------	139	107	114	102	100	98	70	129	111	112	140	129	1,351
Total 1951 ----------	51,531	39,990	44,713	41,888	43,281	43,448	34,007	47,072	42,853	51,675	49,207	44,000	533,665

TABLE 7.--Bituminous-coal and lignite production (final figures) in the United States and Alaska in 1951, with estimates by weeks

Week ended--	Production (net tons)	Maximum number of working days	Average production per working day (net tons)
Jan. 6 -----	10,150,000	5	2,030,000
Jan. 13 -----	11,981,000	6	1,997,000
Jan. 20 -----	11,314,000	6	1,886,000
Jan. 27 -----	11,568,000	6	1,928,000
Feb. 3 -----	9,564,000	6	1,594,000
Feb. 10 -----	8,665,000	6	1,444,000
Feb. 17 -----	10,936,000	6	1,823,000
Feb. 24 -----	10,330,000	6	1,722,000
Mar. 3 -----	11,330,000	6	1,888,000
Mar. 10 -----	10,053,000	6	1,676,000
Mar. 17 -----	9,954,000	6	1,659,000
Mar. 24 -----	10,156,000	6	1,693,000
Mar. 31 -----	10,233,000	6	1,706,000
Apr. 7 -----	9,106,000	5.2	1,751,000
Apr. 14 -----	9,947,000	6	1,658,000
Apr. 21 -----	10,598,000	6	1,766,000
Apr. 28 -----	10,431,000	6	1,739,000
May 5 -----	9,671,000	6	1,612,000
May 12 -----	9,587,000	6	1,598,000
May 19 -----	9,620,000	6	1,603,000
May 26 -----	9,722,000	6	1,620,000
June 2 -----	8,645,000	5.4	1,601,000
June 9 -----	9,749,000	6	1,625,000
June 16 -----	10,208,000	6	1,701,000
June 23 -----	10,876,000	6	1,813,000
June 30 -----	10,457,000	5.5	1,901,000
July 7 -----	1,476,000	1	1,476,000
July 14 -----	8,337,000	5.2	1,603,000
July 21 -----	10,128,000	6	1,688,000
July 28 -----	10,125,000	6	1,688,000
Aug. 4 -----	9,928,000	6	1,655,000
Aug. 11 -----	10,149,000	6	1,692,000
Aug. 18 -----	10,249,000	6	1,708,000
Aug. 25 -----	10,714,000	6	1,786,000
Sept. 1 -----	10,578,000	6	1,763,000
Sept. 8 -----	9,278,000	5	1,856,000
Sept. 15 -----	10,893,000	6	1,816,000
Sept. 22 -----	10,970,000	6	1,828,000
Sept. 29 -----	11,107,000	6	1,851,000
Oct. 6 -----	10,894,000	6	1,816,000
Oct. 13 -----	11,003,000	6	1,834,000
Oct. 20 -----	11,399,000	6	1,900,000
Oct. 27 -----	11,603,000	6	1,934,000
Nov. 3 -----	11,310,000	6	1,885,000
Nov. 10 -----	11,498,000	6	1,916,000
Nov. 17 -----	11,602,000	5.8	2,000,000
Nov. 24 -----	10,160,000	5	2,032,000
Dec. 1 -----	12,189,000	6	2,032,000
Dec. 8 -----	11,280,000	6	1,880,000
Dec. 15 -----	11,513,000	6	1,919,000
Dec. 22 -----	10,732,000	6	1,789,000
Dec. 29 -----	7,906,000	5	1,581,000
Jan. 5 -----	1/ 1,793,000	1/1	2/1,839,000
Total 1951 -	533,665,000	301.1	1,772,000

1/ Figures represent output and number of working days in that part of the week included in the calendar year shown. Total production for the week ended January 5, 1952, was 9,195,000 net tons.

2/ Average daily production for entire week and not for working days in the calendar year shown.

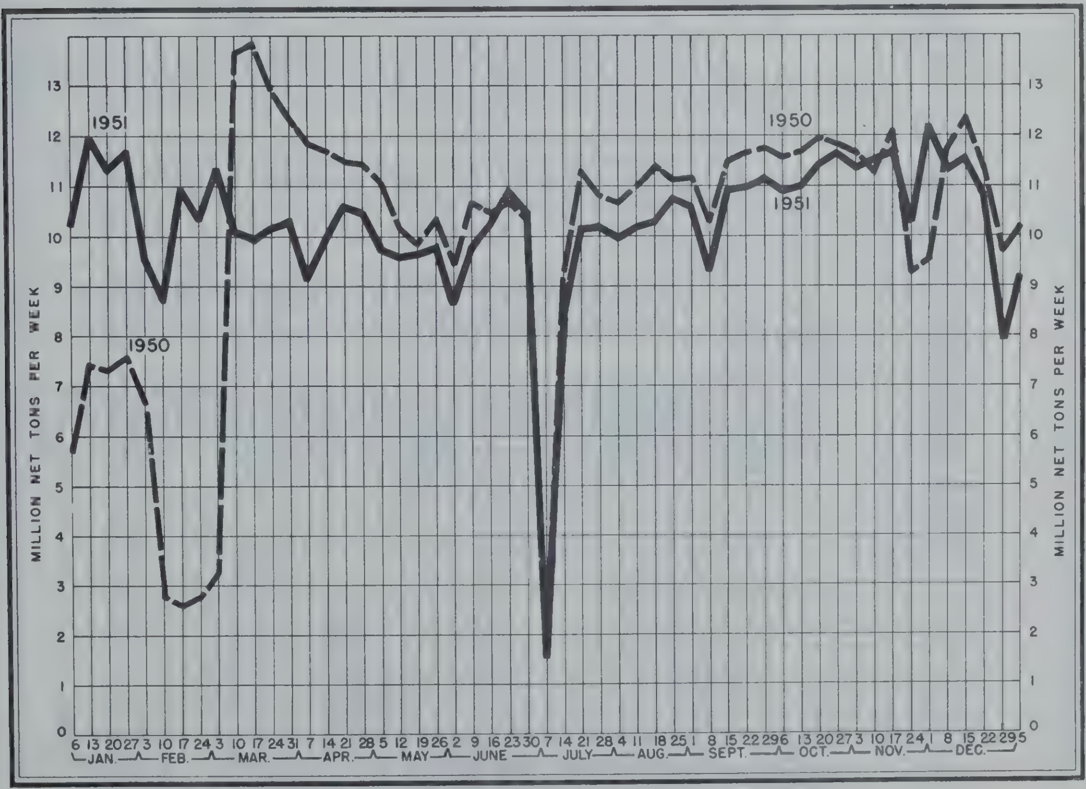

Figure 3.--Production of bituminous coal and lignite in the United States, by weeks, 1950-51.

Details on the bituminous-coal and lignite industry, by States and counties, are presented in other parts of this chapter, notably in table 53.

TABLE 8.--Coal produced in the United States, by States, 1942-51 with production of maximum year and cumulative production from earliest record to end of 1951, in thousands of net tons

State	Maximum production		Production by years										Total production from earliest record to end of 1951
	Year	Quantity	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	
Alabama ----------------------	1926	21,001	19,301	17,160	18,752	18,236	16,183	19,048	18,801	12,934	14,422	13,597	850,297
Arkansas ---------------------	1907	2,670	1,985	1,718	1,972	1,854	1,631	1,871	1,662	962	1,169	1,107	93,652
Colorado ---------------------	1917	12,483	8,086	8,324	8,168	7,621	5,914	6,358	5,631	4,636	4,259	4,103	479,483
Georgia ----------------------	1903	416	31	14	24	43	114	7	20	(1)	(1)	(1)	(1)
Illinois ---------------------	1918	89,291	65,071	72,631	76,792	73,011	63,469	67,860	65,342	47,208	56,291	54,200	3,241,774
Indiana ----------------------	1918	30,679	25,388	25,065	27,962	25,183	21,697	25,449	23,849	16,550	19,957	19,451	1,024,696
Iowa -------------------------	1917	8,966	2,948	2,771	2,141	2,046	1,788	1,684	1,670	1,725	1,891	1,630	341,254
Kansas -----------------------	1918	7,562	4,230	3,437	3,369	3,228	2,493	2,745	2,538	2,031	2,125	1,961	270,137
Kentucky ---------------------	1947	84,241	62,231	63,211	71,356	69,593	66,553	84,241	82,084	62,583	78,495	74,972	2,109,241
Maryland ---------------------	1907	5,533	2,001	1,933	1,870	1,763	2,003	2,051	1,661	668	648	589	261,062
Michigan ---------------------	1907	2,036	231	169	140	126	80	14	13	12	11	7	46,391
Missouri ---------------------	1917	5,671	3,520	4,310	4,779	3,983	3,733	4,236	4,023	3,647	2,963	3,269	253,700
Montana (bituminous and lignite)	1944	4,844	3,829	4,833	4,844	4,467	3,723	3,178	2,898	2,766	2,520	2,345	162,128
New Mexico -------------------	1918	4,023	1,669	1,851	1,744	1,484	1,280	1,443	1,364	1,004	727	783	122,950
North Carolina ---------------	1922	79	---	---	---	---	---	---	---	(1)	(1)	(1)	(1)
North Dakota (lignite) --------	1950	3,261	2,537	2,500	2,366	2,522	2,555	2,760	2,961	2,967	3,261	3,224	74,125
Ohio -------------------------	1920	45,878	32,764	32,255	33,877	32,737	32,314	37,548	38,708	30,961	37,761	37,949	1,773,392
Oklahoma ---------------------	1920	4,849	2,387	2,838	3,209	2,909	2,647	3,421	3,462	3,022	2,679	2,223	163,677
Pennsylvania (bituminous) -----	1918	178,551	144,073	141,050	146,052	132,965	125,497	147,079	134,542	89,215	105,870	108,164	7,579,825
Tennessee --------------------	1942	8,158	8,158	7,179	7,266	6,271	5,618	6,258	6,483	4,172	5,070	5,401	334,783
Texas (bituminous and lignite)-	1913	2,429	304	153	2/ 109	2/ 80	2/ 56	2/ 61	2/ 57	2/ 49	2/ 18	-	60,929
Utah -------------------------	1947	7,429	5,517	6,666	7,119	6,679	5,994	7,429	6,813	6,160	6,670	6,136	210,672
Virginia ---------------------	1951	21,400	20,136	20,280	19,514	17,235	15,527	20,171	17,999	14,584	17,667	21,400	593,190
Washington -------------------	1918	4,082	1,953	1,528	1,524	1,357	991	1,118	1,220	899	874	857	144,180
West Virginia ----------------	1947	176,157	155,882	158,804	164,704	152,035	144,020	176,157	168,862	122,610	144,116	163,310	5,269,169
Wyoming ----------------------	1945	9,847	8,133	9,155	9,540	9,847	7,635	8,051	6,412	6,001	6,348	6,430	376,239
Other States -----------------	----	---	328	342	383	342	407	386	443	502	499	557	67,035
Total bituminous and lignite	1947	630,624	582,693	590,177	619,576	577,617	533,922	630,624	599,518	437,868	516,311	533,665	25,913,981
Pennsylvania anthracite -------	1917	99,612	60,328	60,644	63,701	54,934	60,507	57,190	57,140	42,702	44,077	42,670	4,985,690
Grand total ---------------	----	---	643,021	650,821	683,277	632,551	594,429	687,814	656,658	480,570	560,388	576,335	30,899,671

1/ Included under "Other States."
2/ Lignite only.

TABLE 9.—Number of mines, production, value, employment, days active, man-days, and output per day at bituminous-coal and lignite mines in the United States, 1951, by States

(Exclusive of mines producing less than 1,000 tons)

State	Number of active mines	Disposition of coal produced (net tons)					Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day
		Shipped by rail or water 1/	Trucked to railroad or waterway for further shipment	Shipped by truck	Used at mine 2/	Total quantity		Underground	Surface		Total			
									In strip pits	All others				
Alabama	298	11,013,170	742,025	1,000,721	841,066	13,596,982	$6.06	10,740	710	2,372	13,822	197	2,721,296	5.00
Alaska	6	486,678	-	3,900	3,755	494,333	7.62	120	58	75	253	243	61,371	8.05
Arizona	1	-	-	4,969	-	4,969	6.00	8	-	1	9	242	2,177	2.28
Arkansas	58	952,915	122,795	30,041	954	1,106,705	7.85	1,350	195	275	1,820	138	251,220	4.41
California (lignite)	1	-	-	-	3,657	3,657	10.25	-	3	-	3	125	375	9.75
Colorado	151	2,775,062	249,974	985,961	91,642	4,102,639	5.16	3,249	68	873	4,190	178	747,320	5.49
Illinois	264	46,503,367	907,785	6,051,058	737,665	54,199,875	4.07	19,555	1,966	7,295	28,816	170	4,909,521	11.04
Indiana	94	17,087,074	94,065	1,775,136	494,170	19,450,445	4.04	5,188	1,746	2,067	9,001	192	1,724,684	11.28
Iowa	102	580,627	265,083	770,118	14,470	1,630,298	3.75	808	316	219	1,343	179	240,194	6.79
Kansas	45	1,737,371	45,453	173,079	5,198	1,961,101	3.94	212	468	286	966	173	167,175	11.73
Kentucky	2,309	57,285,024	4,466,791	12,704,454	516,066	74,972,335	4.89	49,055	1,906	9,117	60,078	183	10,992,698	6.82
Maryland	101	100,038	104,086	382,926	1,589	588,639	4.73	503	140	69	712	180	130,028	4.53
Michigan	1	-	-	6,267	1,080	7,347	10.19	28	-	2	30	151	4,530	1.62
Missouri	75	2,673,784	6,186	585,219	4,094	3,269,283	4.10	544	506	371	1,421	193	274,367	11.92
Montana:														
Bituminous	14	2,216,646	18,410	66,211	9,081	2,310,348	2.61	422	55	204	681	200	136,454	16.93
Lignite	6	-	-	34,901	169	35,070	3.51	17	4	4	25	190	4,762	7.36
Total Montana	20	2,216,646	18,410	101,112	9,250	2,345,418	2.63	439	59	208	706	200	141,216	16.61
New Mexico	30	662,337	47,798	60,629	11,934	782,698	5.75	703	-	122	825	179	147,761	5.30
North Dakota (lignite)	54	2,503,025	10,631	446,104	264,267	3,224,027	2.41	110	301	265	676	238	160,742	20.06
Ohio	639	25,160,447	1,806,318	10,811,709	170,218	37,948,692	3.87	9,633	4,076	3,784	17,493	210	3,667,764	10.35
Oklahoma	50	1,820,391	278,271	118,412	6,155	2,223,229	6.24	1,159	457	329	1,945	193	375,615	5.92
Pennsylvania	1,772	72,759,986	12,102,446	15,924,946	7,376,465	108,163,843	5.29	63,173	8,149	12,987	84,309	213	17,994,682	6.01
South Dakota (lignite)	2	-	-	28,325	25	28,350	3.49	-	13	1	14	222	3,109	9.12
Tennessee	256	3,798,526	374,490	1,191,490	36,440	5,400,946	4.99	5,449	234	831	6,514	169	1,102,232	4.90
Utah	61	5,143,873	353,049	422,058	216,977	6,135,957	5.32	3,138	-	923	4,061	204	828,361	7.41
Virginia	262	17,636,433	2,271,235	1,102,743	389,458	21,399,869	5.42	14,749	379	2,555	17,683	209	3,699,716	5.78
Washington	25	604,129	85,893	151,064	15,940	857,026	7.04	724	53	179	956	211	201,771	4.25
West Virginia	1,289	145,671,442	10,673,406	3,141,881	3,823,093	163,309,822	5.23	88,862	4,054	18,970	111,886	219	24,530,251	6.66
Wyoming	41	6,154,575	18,204	130,964	125,890	6,429,633	4.19	2,330	245	742	3,317	199	661,377	9.72
Other States:														
Georgia and North Carolina	2	-	-	26,614	-	26,614	6.71	39	-	9	48	277	13,305	2.00
Total	8,009	425,326,920	35,044,394	58,131,900	15,161,518	533,664,732	4.92	281,868	26,102	64,927	372,897	203	75,754,858	7.04

1/Includes coal loaded at mine directly into railroad cars or river barges.

2/Includes coal used by mine employees, taken by locomotive tenders at tipple, used at mine for power and heat, coal transported from mine to point of use by conveyor or tram, coal made into beehive coke at mine and all other uses at mines.

3/Value received or charged for coal, f.o.b. mine, including selling cost. (Includes a value for coal not sold but used by producer, such as mine fuel and coal coked as estimated by producer at average prices that might have been received if such coal had been sold commercially.)

TABLE 10. — Number of mines, production, value, employment, days active, man-days and output per man per day at bituminous-coal and lignite mines in the United States, 1951, by districts.

(Districts as defined in the Bituminous Coal Act of 1937 and modifications thereto. Exclusive of mines producing less than 1,000 tons)

District	Number of active mines	Disposition of coal produced (net tons)					Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day
									Surface					
		Shipped by rail or water 1/	Trucked to railroad or waterway for further shipment	Shipped by truck	Used at mine 2/	Total quantity		Underground	In strip pits	All others	Total			
1. Eastern Pa.	1,168	30,312,580	9,672,472	5,523,540	1,610,844	47,119,436	$ 5.10	26,728	5,358	6,004	38,090	205	7,792,040	6.05
2. Western Pa.	725	42,728,138	2,633,571	10,893,293	5,767,718	62,022,720	5.27	37,266	2,997	7,114	47,377	220	10,408,048	5.96
3. Northern West Va.	463	38,544,606	5,268,488	1,138,672	759,054	45,710,820	4.56	19,836	2,032	5,112	26,980	197	5,325,388	8.58
4. Ohio	639	25,160,447	1,806,318	10,811,709	170,218	37,948,692	3.87	9,633	4,076	3,784	17,493	210	3,667,764	10.35
5. Michigan	1	-	-	6,267	1,080	7,347	10.19	28	-	2	30	151	4,530	1.62
6. Panhandle	30	2,283,128	518,043	604,610	981,443	4,387,224	4.38	2,175	239	400	2,814	215	604,753	7.25
7. Southern Number 1.	393	51,126,914	2,298,296	463,411	739,195	54,627,816	6.08	36,943	1,118	6,975	45,036	228	10,275,322	5.32
8. Southern Number 2.	2,896	112,648,837	8,784,873	13,302,964	2,251,506	136,988,180	5.24	92,831	1,962	16,831	111,624	200	22,318,822	6.14
9. West Kentucky	209	19,021,101	798,702	2,040,208	30,601	21,890,612	3.62	5,103	1,090	1,977	8,170	188	1,537,534	14.24
10. Illinois	264	46,503,367	907,785	6,051,058	737,665	54,199,875	4.07	19,555	1,966	7,295	28,816	170	4,909,521	11.04
11. Indiana	94	17,087,074	94,065	1,775,136	494,170	19,450,445	4.04	5,188	1,746	2,067	9,001	192	1,724,684	11.28
12. Iowa	102	580,627	265,083	770,118	14,470	1,630,298	3.75	808	316	219	1,343	179	240,194	6.79
13. Southeastern	405	11,599,315	760,034	1,509,077	843,816	14,712,242	5.97	11,688	776	2,497	14,961	195	2,922,301	5.03
14. Arkansas-Oklahoma	82	1,519,252	390,715	84,398	2,859	1,997,224	7.47	1,787	412	394	2,593	155	403,176	4.95
15. Southwestern	146	5,665,209	61,990	822,353	13,542	6,563,094	4.39	1,478	1,214	867	3,559	187	665,201	9.87
16. Northern Colorado	24	622,666	9,190	434,600	40,783	1,107,239	4.27	631	25	133	789	183	144,018	7.69
17. Southern Colorado	136	2,753,054	256,925	571,226	51,600	3,632,805	5.52	3,054	43	812	3,909	182	711,092	5.11
18. New Mexico	23	61,679	31,657	45,733	14,850	153,919	6.12	275	3	51	329	129	42,523	3.62
19. Wyoming	41	6,154,575	18,204	130,964	125,890	6,429,633	4.19	2,330	245	742	3,317	199	661,377	9.72
20. Utah	61	5,143,873	353,049	422,058	216,977	6,135,957	5.32	3,138	-	923	4,061	204	828,361	7.41
21. North-South Dakota	56	2,503,025	10,631	474,429	264,292	3,252,377	2.42	110	314	266	690	237	163,851	19.85
22. Montana	20	2,216,646	18,410	101,112	9,250	2,345,418	2.63	439	59	208	706	200	141,216	16.61
23. Washington	31	1,090,807	85,893	154,964	19,695	1,351,359	7.25	844	111	254	1,209	218	263,142	5.14
Total	8,009	425,326,920	35,044,394	58,131,900	15,161,518	533,664,732	4.92	281,868	26,102	64,927	372,897	203	75,754,858	7.04

1/ Includes coal loaded at mine directly into railroad cars or river barges.

2/ Includes coal used by mine employees, taken by locomotive tenders at tipple, used at mine for power and heat, transported from mine to point of use by conveyor or tram, made into beehive coke at mine, and all other uses at mine.

3/ Value received or charged for coal f.o.b. mine including selling cost. (Includes a value for coal not sold but used by producer, such as mine fuel and coal coked as estimated by producer at average prices that might have been received if such coal had been sold commercially.)

TABLE 11.--Number and production of bituminous-coal and lignite mines in the United States, 1951, by State and size of output

(Exclusive of mines producing less than 1,000 tons)

State	Class 1A - 500,000 tons and over				Class 1B - 200,000 to 500,000 tons				Class 2 - 100,000 to 200,000 tons			
	Mines		Production		Mines		Production		Mines		Production	
	Number	Percent	Net tons	Percent	Number	Percent	Net tons	Percent	Number	Percent	Net tons	Percent
Alabama	6	2.0	5,262,480	38.7	11	3.7	3,061,511	22.5	14	4.7	1,876,744	13.8
Alaska	—	—	—	—	—	—	—	—	2	33.3	327,486	66.2
Arizona	—	—	—	—	—	—	—	—	—	—	—	—
Arkansas	—	—	—	—	1	1.7	202,869	18.3	1	1.7	114,472	10.4
Colorado	1	.7	501,430	12.2	1	.7	237,794	5.8	7	4.6	1,000,586	24.4
Illinois	47	17.8	40,869,352	75.4	20	7.6	7,223,184	13.3	21	8.0	3,048,006	5.6
Indiana	16	17.0	11,593,364	58.6	15	16.0	5,560,702	28.6	10	10.6	1,310,319	6.7
Iowa	—	—	—	—	1	1.0	294,174	18.1	1	1.0	112,384	6.9
Kansas	—	—	—	—	3	6.7	1,061,467	54.1	4	8.9	615,986	31.4
Kentucky	30	1.3	23,415,991	31.2	72	3.1	21,355,132	28.5	71	3.1	9,539,986	12.7
Maryland	—	—	—	—	—	—	—	—	—	—	—	—
Michigan	—	—	—	—	—	—	—	—	—	—	—	—
Missouri	1	1.3	726,720	22.2	5	6.7	1,726,136	52.8	2	2.7	332,393	10.2
Montana (bituminous) 1/	1	7.1	1,488,300	64.4	1	7.1	405,204	17.5	2	14.3	275,756	11.9
New Mexico	1	3.3	535,430	68.4	—	—	—	—	—	—	—	—
Ohio	18	2.8	16,916,938	44.6	20	3.1	5,955,022	15.7	41	6.4	5,367,209	14.1
Oklahoma	—	—	—	—	2	4.0	513,748	23.1	7	14.0	930,089	41.8
Pennsylvania	48	2.7	46,059,494	42.6	64	3.6	18,857,735	17.4	105	5.9	14,761,055	13.7
Tennessee	—	—	—	—	3	1.2	843,077	15.6	11	4.3	1,631,758	30.2
Utah	3	4.9	2,139,548	34.9	6	9.8	2,202,359	35.9	5	8.2	726,725	11.8
Virginia	11	4.2	8,834,543	41.3	12	4.6	3,451,711	16.1	28	10.7	4,074,429	19.0
Washington	—	—	—	—	2	8.0	436,946	51.0	—	—	—	—
West Virginia	77	6.0	64,751,647	39.7	182	14.1	57,797,985	35.4	122	9.5	17,788,555	10.9
Wyoming	4	9.7	3,102,984	48.3	6	14.6	2,118,923	33.0	7	17.1	901,936	14.0
Other States:												
Georgia and North Carolina	—	—	—	—	—	—	—	—	—	—	—	—
California, Montana, North Dakota, and South Dakota (lignite)	—	—	—	—	7	11.1	2,398,974	72.9	3	4.7	424,747	12.9
Total	264	3.3	225,998,221	42.4	434	5.4	135,704,653	25.4	464	5.8	65,160,621	12.2

TABLE 11.—Number and production of bituminous-coal and lignite mines in the United States, 1951, by State and size of output - Continued

(Exclusive of mines producing less than 1,000 tons)

State	Class 3 - 50,000 to 100,000 tons				Class 4 - 10,000 to 50,000 tons				Class 5 - Less than 10,000 tons				Total		
	Mines		Production		Mines		Production		Mines		Production		Mines	Production (net tons)	
	Number	Percent	Net tons	Percent	Number	Percent	Net tons	Percent	Number	Percent	Net tons	Percent		Total	Average per mine
Alabama	20	6.7	1,409,550	10.4	55	18.5	1,254,722	9.2	192	64.4	731,975	5.4	298	13,596,982	45,627
Alaska	1	16.7	84,517	17.1	3	50.0	82,330	16.7	—	—	—	—	6	494,333	82,389
Arizona	—	—	—	—	—	—	—	—	1	100.0	4,969	100.0	1	4,969	4,969
Arkansas	3	5.2	219,169	19.8	20	34.5	467,104	42.2	33	56.9	103,091	9.3	58	1,106,705	19,081
Colorado	16	10.6	1,153,752	28.1	37	24.5	873,790	21.3	89	58.9	335,287	8.2	151	4,102,639	27,170
Illinois	14	5.3	925,118	1.7	69	26.1	1,730,624	3.2	93	35.2	403,591	.8	264	54,199,875	205,303
Indiana	9	9.6	519,963	2.6	25	26.6	596,415	3.1	19	20.2	69,682	.4	94	19,450,445	206,920
Iowa	4	4.0	228,778	14.0	33	32.3	724,322	44.4	63	61.7	270,640	16.6	102	1,630,298	15,983
Kansas	1	2.2	57,970	3.0	4	8.9	82,290	4.2	33	73.3	143,388	7.3	45	1,961,101	43,580
Kentucky	90	3.9	6,430,938	8.6	396	17.1	8,304,148	11.1	1,650	71.5	5,926,140	7.9	2,309	74,972,335	32,470
Maryland	—	—	—	—	15	14.9	310,365	52.7	86	85.1	278,274	47.3	101	588,639	5,828
Michigan	—	—	—	—	—	—	—	—	1	100.0	7,347	100.0	1	7,347	7,347
Missouri	1	1.3	68,021	2.1	8	10.7	192,083	5.9	58	77.3	223,930	6.8	75	3,269,283	43,590
Montana (bituminous) 1/	—	—	—	—	3	21.5	88,893	3.9	7	50.0	52,195	2.3	14	2,310,348	165,025
New Mexico	—	—	—	—	6	20.0	179,811	23.0	23	76.7	67,457	8.6	30	782,698	26,090
Ohio	54	8.5	4,045,660	10.6	184	28.8	4,371,124	11.6	322	50.4	1,292,739	3.4	639	37,948,692	59,388
Oklahoma	8	16.0	528,373	23.8	6	12.0	168,477	7.6	27	54.0	82,542	3.7	50	2,223,229	44,465
Pennsylvania	165	9.3	11,603,705	10.7	580	32.8	13,327,546	12.3	810	45.7	3,554,308	3.3	1,772	108,163,843	61,041
Tennessee	18	7.0	1,385,949	25.7	43	16.8	907,400	16.8	181	70.7	632,762	11.7	256	5,400,946	21,097
Utah	7	11.5	529,915	8.6	19	31.2	460,619	7.5	21	34.4	76,791	1.3	61	6,135,957	100,589
Virginia	26	9.9	1,683,584	7.9	86	32.8	2,588,625	12.1	99	37.8	766,977	3.6	262	21,399,869	81,679
Washington	3	12.0	174,365	20.3	11	44.0	208,678	24.4	9	36.0	37,037	4.3	25	857,026	34,281
West Virginia	161	12.5	11,464,766	7.0	427	33.1	9,844,788	6.0	320	24.8	1,662,081	1.0	1,289	163,309,822	126,695
Wyoming	2	4.9	156,222	2.4	5	12.2	88,572	1.4	17	41.5	60,996	.9	41	6,429,633	156,820
Other States:															
Georgia and North Carolina	—	—	—	—	1	50.0	25,414	95.5	1	50.0	1,200	4.5	2	26,614	13,307
California, Montana, North Dakota, and South Dakota (lignite)	1	1.6	71,420	2.2	10	15.9	220,956	6.7	42	66.7	175,007	5.3	63	3,291,104	52,240
Total	604	7.5	42,741,735	8.0	2,046	25.6	47,099,096	8.8	4,197	52.4	16,960,406	3.2	8,009	533,664,732	66,633

1/Lignite included with "Other States".

TABLE 12.--Growth of the bituminous - coal- and lignite-mining industry in the United States, 1890-1951

Year	Men employed	Average number of days worked	Average days lost per man on strike	Net tons per man-		Percent of underground production-		Percent of total production -	
				Per day	Per year	Cut by machines 1/	Mechanically loaded	Mechanically cleaned 2/	Mined by stripping
1890	192,204	226	(3)	2.56	579	(3)	(3)	(3)	(3)
1891	205,803	223	(3)	2.57	573	5.3	(3)	(3)	(3)
1892	212,893	219	(3)	2.72	596	(3)	(3)	(3)	(3)
1893	230,365	204	(3)	2.73	557	(3)	(3)	(3)	(3)
1894	244,603	171	(3)	2.84	486	(3)	(3)	(3)	(3)
1895	239,962	194	(3)	2.90	563	(3)	(3)	(3)	(3)
1896	244,171	192	(3)	2.94	564	11.9	(3)	(3)	(3)
1897	247,817	196	(3)	3.04	596	15.3	(3)	(3)	(3)
1898	255,717	211	(3)	3.09	651	19.5	(3)	(3)	(3)
1899	271,027	234	46	3.05	713	22.7	(3)	(3)	(3)
1900	304,375	234	43	2.98	697	24.9	(3)	(3)	(3)
1901	340,235	225	35	2.94	664	25.6	(3)	(3)	(3)
1902	370,056	230	44	3.06	703	26.8	(3)	(3)	(3)
1903	415,777	225	28	3.02	680	27.6	(3)	(3)	(3)
1904	437,832	202	44	3.15	637	28.2	(3)	(3)	(3)
1905	460,629	211	23	3.24	684	32.8	(3)	(3)	(3)
1906	478,425	213	63	3.36	717	34.7	(3)	2.7	(3)
1907	513,258	234	14	3.29	769	35.1	(3)	2.9	(3)
1908	516,264	193	38	3.34	644	37.0	(3)	3.6	(3)
1909	543,152	209	29	3.34	699	37.5	(3)	3.8	(3)
1910	555,533	217	89	3.46	751	41.7	(3)	3.8	(3)
1911	549,775	211	27	3.50	738	43.9	(3)	(3)	(3)
1912	548,632	223	35	3.68	820	46.8	(3)	3.9	(3)
1913	571,882	232	36	3.61	837	50.7	(3)	4.6	(3)
1914	583,506	195	80	3.71	724	51.8	(3)	4.8	0.3
1915	557,456	203	61	3.91	794	55.3	(3)	4.7	.6
1916	561,102	230	26	3.90	896	56.9	(3)	4.6	.8
1917	603,143	243	17	3.77	915	56.1	(3)	4.6	1.0
1918	615,305	249	7	3.78	942	56.7	(3)	3.8	1.4
1919	621,998	195	37	3.84	749	60.0	(3)	3.6	1.2
1920	639,547	220	22	4.00	881	60.7	(3)	3.3	1.5
1921	663,754	149	23	4.20	627	66.4	(3)	3.4	1.2
1922	687,958	142	117	4.28	609	64.8	(3)	(3)	2.4
1923	704,793	179	20	4.47	801	68.3	0.3	3.8	2.1
1924	619,604	171	73	4.56	781	71.5	.7	(3)	2.8
1925	588,493	195	30	4.52	884	72.9	1.2	(3)	3.2
1926	593,647	215	24	4.50	966	73.8	1.9	(3)	3.0
1927	593,918	191	153	4.55	872	74.9	3.3	5.3	3.6
1928	522,150	203	83	4.73	959	76.9	4.5	5.7	4.0
1929	502,993	219	11	4.85	1,064	78.4	7.4	6.9	3.8
1930	493,202	187	43	5.06	948	81.0	10.5	8.3	4.3
1931	450,213	160	35	5.30	849	83.2	13.1	9.5	5.0
1932	406,380	146	120	5.22	762	84.1	12.3	9.8	6.3
1933	418,703	167	30	4.78	797	84.7	12.0	10.4	5.5
1934	458,011	178	15	4.40	785	84.1	12.2	11.1	5.8
1935	462,403	179	4/ 7	4.50	805	84.2	13.5	12.2	6.4
1936	477,204	199	21	4.62	920	84.8	16.3	13.9	6.4
1937	491,864	193	4/ 19	4.69	906	(3)	20.2	14.6	7.1
1938	441,333	162	13	4.89	790	87.5	26.7	18.2	8.7
1939	421,788	178	36	5.25	936	87.9	31.0	20.1	9.6
1940	439,075	202	8	5.19	1,049	88.4	35.4	22.2	9.2
1941	456,981	216	27	5.20	1,125	89.0	40.7	22.9	10.7
1942	461,991	246	7	5.12	1,261	89.7	45.2	24.4	11.5
1943	416,007	264	4/ 15	5.38	1,419	90.3	48.9	24.7	13.5
1944	393,347	278	4/ 5	5.67	1,575	90.5	52.9	25.6	16.3
1945	383,100	261	4/ 9	5.78	1,508	90.8	56.1	25.6	19.0
1946	5/396,434	214	4/ 23	6.30	1,347	90.8	58.4	26.0	21.1
1947	5/419,182	234	4/ 5	6.42	1,504	90.0	60.7	27.7	22.1
1948	5/441,631	217	4/ 16	6.26	1,358	90.7	64.3	30.2	23.3
1949	5/433,698	157	4/ 15	6.43	1,010	91.4	67.0	35.1	24.2
1950	5/415,582	183	4/ 56	6.77	1,239	92.6	69.4	38.5	23.9
1951	5/372,897	203	4/ 4	7.04	1,429	94.9	73.1	45.0	22.0

1/ Percentages for 1890 to 1913, inclusive, are of total production, as a separation of strip and underground production is not available for those years.

2/ For 1906 to 1926, inclusive, these percentages are exclusive of coal cleaned at central washeries operated by consumers.

3/ Data not available.

4/ Bureau of Labor Statistics, U. S. Department of Labor.

5/ Average number of men working daily.

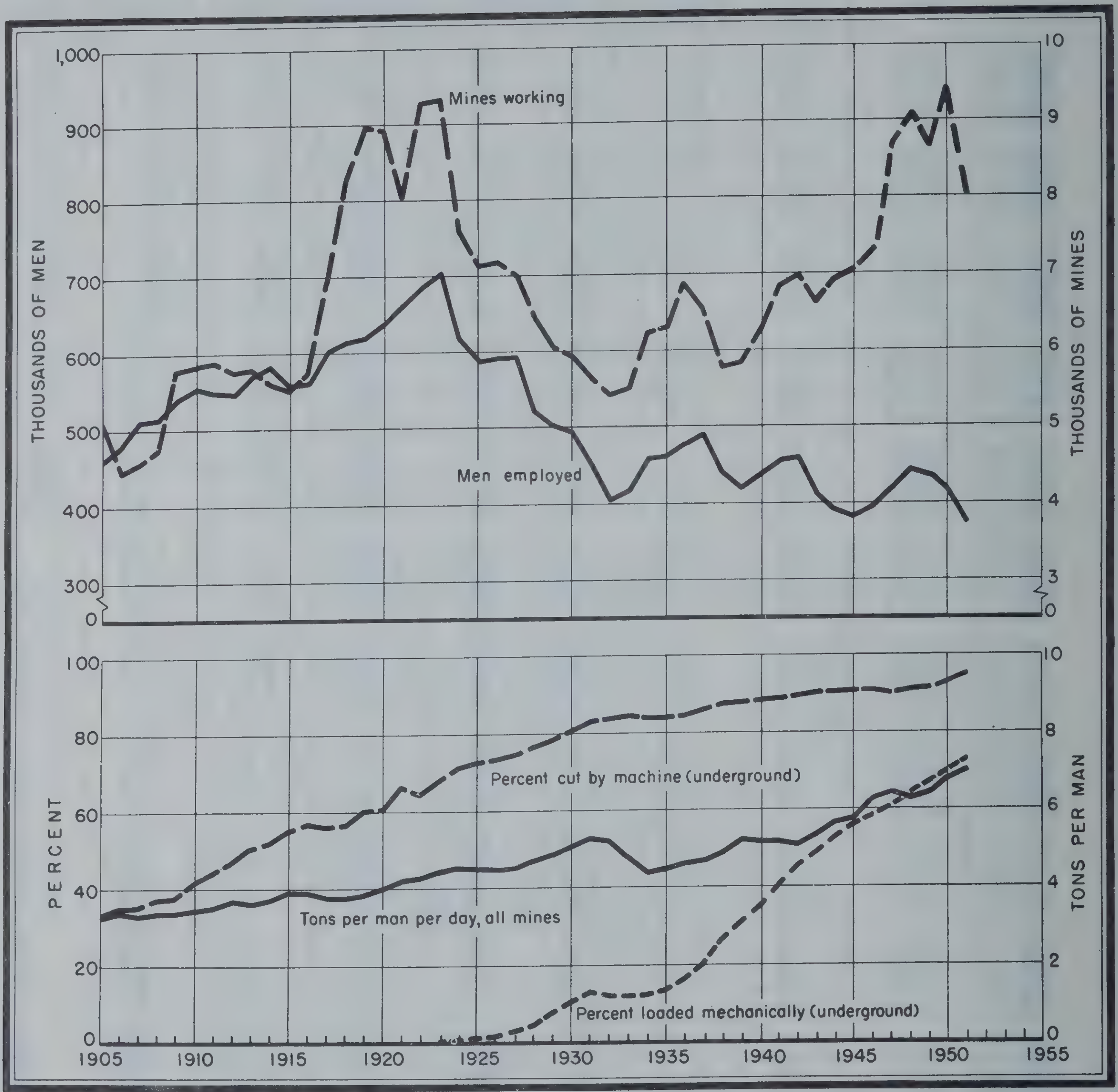

Figure 4.--Trends of employment, mechanization, and output per man at bituminous-coal and lignite mines in the United States, 1905-51.

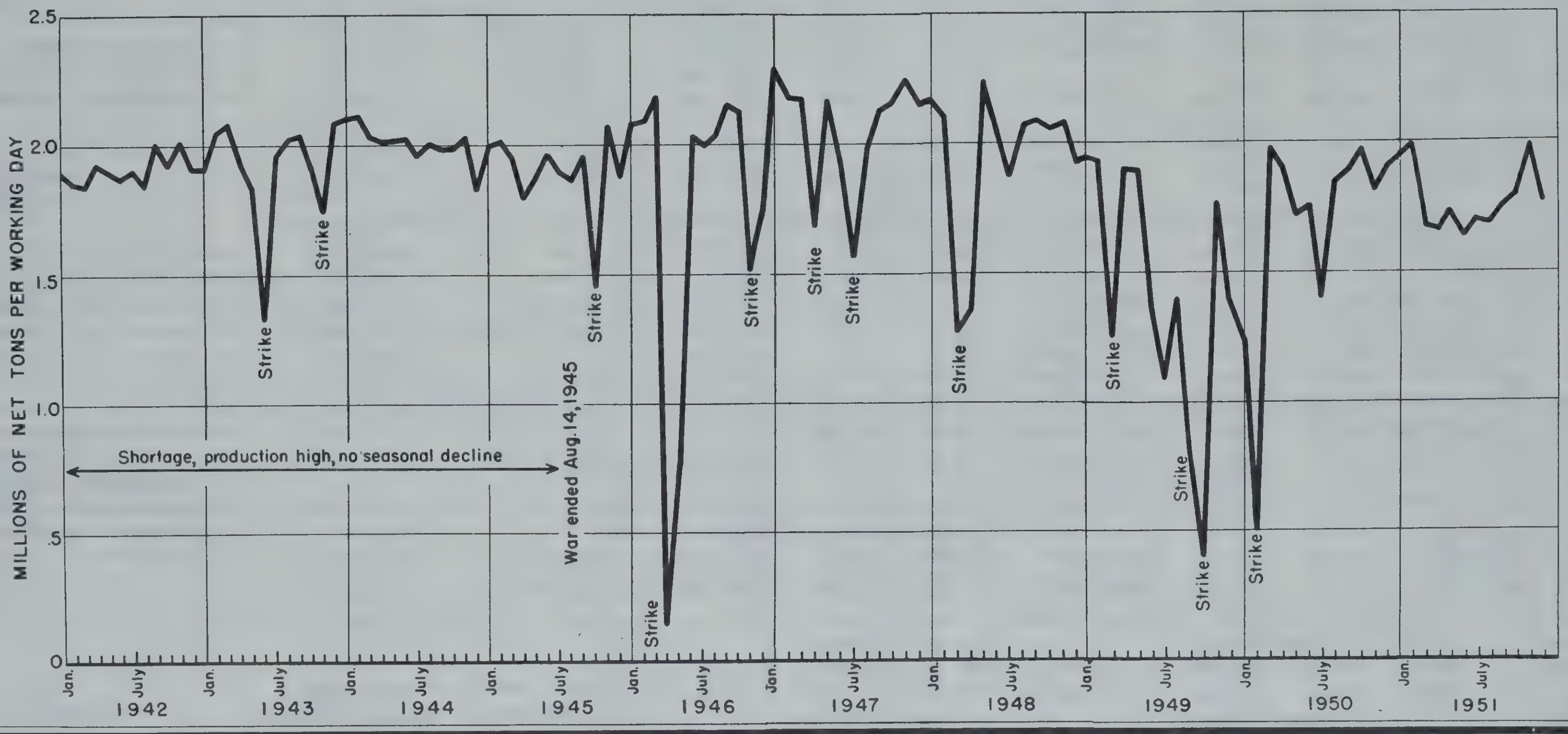

Figure 5.--Average production of bituminous coal and lignite in the United States per working day in each month, 1942-51.

TABLE 13.--Average output per man per day at bituminous-coal and lignite mines in the United States, 1951, by method of mining and loading, by States

State	Mined underground					Mined by stripping			Total production	
	Hand-loaded (net tons	Mechanically loaded (net tons)	Total			Net tons	Percent of grand total	Average tons per man per day	Net tons	Average tons per man per day
			Net tons	Percent of grand total	Average tons per man per day					
Alabama	1,677,266	10,025,694	11,702,960	86.1	4.60	1,894,022	13.9	10.77	13,596,982	5.00
Alaska	253,524	8,450	261,974	53.0	5.48	232,359	47.0	17.10	494,333	8.05
Arizona	4,969	---	4,969	100.0	2.28	---	---	---	4,969	2.28
Arkansas	106,310	592,376	698,686	63.1	3.03	408,019	36.9	10.73	1,106,705	4.41
California (lignite)	---	---	---	---	---	3,657	100.0	9.75	3,657	9.75
Colorado	1,189,289	2,547,298	3,736,587	91.1	5.14	366,052	8.9	18.47	4,102,639	5.49
Illinois	1,852,125	34,051,234	35,903,359	66.2	9.01	18,296,516	33.8	19.75	54,199,875	11.04
Indiana	418,557	8,034,618	8,453,175	43.5	8.23	10,997,270	56.5	15.76	19,450,445	11.28
Iowa	435,771	43,341	479,112	29.4	3.30	1,151,186	70.6	12.14	1,630,298	6.79
Kansas	73,826	---	73,826	3.8	2.75	1,887,275	96.2	13.45	1,961,101	11.73
Kentucky	27,429,306	35,815,851	63,245,157	84.4	6.08	11,727,178	15.6	19.96	74,972,335	6.82
Maryland	345,239	77,312	422,551	71.8	3.80	166,088	28.2	8.82	588,639	4.53
Michigan	7,347	---	7,347	100.0	1.62	---	---	---	7,347	1.62
Missouri	255,614	---	255,614	7.8	2.58	3,013,669	92.2	17.20	3,269,283	11.92
Montana:										
Bituminous	36,664	785,384	822,048	35.6	6.81	1,488,300	64.4	94.32	2,310,348	16.93
Lignite	20,607	8,150	28,757	82.0	7.33	6,313	18.0	7.52	35,070	7.36
Total Montana	57,271	793,534	850,805	36.3	6.83	1,494,613	63.7	89.93	2,345,418	16.61
New Mexico	162,452	620,246	782,698	100.0	5.30	---	---	---	782,698	5.30
North Dakota (lignite)	26,250	224,651	250,901	7.8	7.57	2,973,126	92.2	23.30	3,224,027	20.06
Ohio	2,421,476	13,917,555	16,339,031	43.1	6.81	21,609,661	56.9	17.06	37,948,692	10.35
Oklahoma	174,491	825,917	1,000,408	45.0	3.83	1,222,821	55.0	10.71	2,223,229	5.92
Pennsylvania	26,547,780	58,259,720	84,807,500	78.4	5.24	23,356,343	21.6	12.82	108,163,843	6.01
South Dakota (lignite)	---	---	---	---	---	28,350	100.0	9.12	28,350	9.12
Tennessee	2,952,271	1,970,341	4,922,612	91.1	4.65	478,334	8.9	10.68	5,400,946	4.90
Utah	132,164	6,003,793	6,135,957	100.0	7.41	---	---	---	6,135,957	7.41
Virginia	10,426,890	9,599,497	20,026,387	93.6	5.55	1,373,482	6.4	15.42	21,399,869	5.78
Washington	199,215	583,860	783,075	91.4	4.08	73,951	8.6	7.48	857,026	4.25
West Virginia	34,565,606	115,716,327	150,281,933	92.0	6.35	13,027,889	8.0	14.85	163,309,822	6.66
Wyoming	49,512	4,544,306	4,593,818	71.4	7.93	1,835,815	28.6	22.32	6,429,633	9.72
Other States:										
Georgia and North Carolina	26,614	---	26,614	100.0	2.00	---	---	---	26,614	2.00
Total	111,791,135	304,255,921	416,047,056	78.0	6.08	117,617,676	22.0	16.02	533,664,732	7.04

TABLE 14.—Underground production of bituminous coal and lignite in the United States, 1951, by States and method of cutting

State	Cut by hand		Shot from solid		Cut by machines 1/				Total underground (net tons)
	Net tons	Percent of total underground	Net tons	Percent of total underground	Net tons	Percent of total underground	Number of coal-cutting machines in use	Average output per machine (net tons)	
Alabama	36,268	0.3	1,188,896	10.2	10,477,796	89.5	395	26,526	11,702,960
Alaska	-	-	261,974	100.0	-	-	-	-	261,974
Arizona	-	-	1,946	39.2	3,023	60.8	1	3,023	4,969
Arkansas	8,815	1.3	43,680	6.2	646,191	92.5	83	7,785	698,686
Colorado	569,457	15.2	96,845	2.6	3,070,285	82.2	454	6,763	3,736,587
Illinois	-	-	415,832	1.2	35,487,527	98.8	641	55,363	35,903,359
Indiana	14,582	.2	31,225	0.4	8,407,368	99.4	216	38,923	8,453,175
Iowa	3,753	.8	264,662	55.2	210,697	44.0	41	5,139	479,112
Kansas	1,800	2.4	6,209	8.4	65,817	89.2	16	4,114	73,826
Kentucky	323,928	.5	6,209,372	9.8	56,711,857	89.7	2,129	26,638	63,245,157
Maryland	192,255	45.5	38,020	9.0	192,276	45.5	36	5,341	422,551
Michigan	-	-	-	-	7,347	100.0	3	2,449	7,347
Missouri	14,038	5.5	23,830	9.3	217,746	85.2	36	6,049	255,614
Montana:									
Bituminous	-	-	-	-	822,048	100.0	42	19,573	822,048
Lignite	-	-	28,757	100.0	-	-	-	-	28,757
Total Montana	-	-	28,757	3.4	822,048	96.6	42	19,573	850,805
New Mexico	16,046	2.1	66,917	8.5	699,735	89.4	42	16,660	782,698
North Dakota (lignite)	-	-	24,910	9.9	225,991	90.1	4	56,498	250,901
Ohio	31,964	.2	30,041	.2	16,277,026	99.6	655	24,850	16,339,031
Oklahoma	-	-	29,476	2.9	970,932	97.1	114	8,517	1,000,408
Pennsylvania	3,477,558	4.1	1,251,772	1.5	80,078,170	94.4	3,179	25,190	84,807,500
Tennessee	68,385	1.4	739,198	15.0	4,115,029	83.6	245	16,796	4,922,612
Utah	9,911	.2	33,416	.5	6,092,630	99.3	206	29,576	6,135,957
Virginia	57,058	.3	797,225	4.0	19,172,104	95.7	549	34,922	20,026,387
Washington	56,074	7.2	220,242	28.1	506,759	64.7	41	12,360	783,075
West Virginia	1,283,927	.9	3,342,895	2.2	145,655,111	96.9	4,382	33,239	150,281,933
Wyoming	2,590	.1	23,431	.5	4,567,797	99.4	245	18,644	4,593,818
Other States:									
Georgia and North Carolina	-	-	1,200	4.5	25,414	95.5	6	4,236	26,614
Total	6,168,409	1.5	15,171,971	3.6	394,706,676	94.9	13,761	28,683	416,047,056

1/ Includes continuous mining machines and augers.

TABLE 15.--Use of power drills for shot holes in underground bituminous-coal and lignite mines, 1951, by States

State	Number of mines using power drills	Number of power drills		Net tons produced in working places where shot holes were power-drilled			Total production from mines using power drills (net tons)
		Electric	Compressed air	Electric drills	Compressed air drills	Total	
Alabama	90	562	35	10,432,495	-	10,432,495	10,967,228
Alaska	2	20	25	84,517	177,457	261,974	261,974
Arizona	1	1	-	3,023	-	3,023	4,969
Arkansas	18	30	31	84,244	44,227	128,471	562,176
Colorado	99	403	60	2,375,577	4,884	2,380,461	3,429,449
Idaho	-	-	-	-	-	-	-
Illinois	152	1,040	3	34,118,558	-	34,118,558	34,635,311
Indiana	43	293	5	8,296,146	-	8,296,146	8,315,262
Iowa	17	31	-	152,959	-	152,959	175,076
Kansas	1	1	-	7,780	-	7,780	7,780
Kentucky	943	2,608	110	49,646,003	6,125	49,652,128	55,954,333
Maryland	7	13	-	27,260	-	27,260	101,931
Michigan	1	2	-	7,347	-	7,347	7,347
Missouri	8	12	-	138,690	-	138,690	138,690
Montana:							
Bituminous	13	43	-	822,048	-	822,048	822,048
Lignite	5	13	-	28,757	-	28,757	28,757
Total Montana	18	56	-	850,805	-	850,805	850,805
New Mexico	5	45	-	625,036	-	625,036	625,036
North Dakota (lignite)	6	12	-	237,432	-	237,432	237,432
Ohio	217	628	3	12,533,393	-	12,533,393	15,192,180
Oklahoma	7	85	3	823,507	-	823,507	917,126
Oregon	-	-	-	-	-	-	-
Pennsylvania	442	2,519	433	60,282,536	553,949	60,836,485	74,853,488
Tennessee	50	203	26	2,482,859	324,587	2,807,446	3,811,496
Utah	55	261	4	6,114,339	371	6,114,710	6,117,044
Virginia	202	546	41	13,193,535	-	13,193,535	18,064,021
Washington	19	81	127	193,261	561,245	754,506	768,316
West Virginia	599	4,384	432	115,060,204	627,416	115,687,620	138,564,721
Wyoming	23	394	2	4,572,337	-	4,572,337	4,574,799
Other States: Georgia and North Carolina	2	1	5	1,200	-	1,200	26,614
Total	3,027	14,231	1,345	322,345,043	2,300,261	324,645,304	379,164,604

TABLE 16.--Number of underground bituminous-coal and lignite mines and number of haulage units in use, in the United States, in selected years 1/

Units	1924	1946	1948	1949	1950	1951
Underground mines ------	7,352	5,888	7,108	6,798	7,559	6,225
Locomotives:						
Trolley --------------	2/ 12,765	14,110	14,617	3/ 14,090	13,822	13,327
Battery --------------	1,515	1,011	904	3/928	949	900
Other types ----------	443	110	74	3/59	62	51
Total ------------	14,723	15,231	15,595	3/ 15,077	14,833	14,278
Rope haulage units:						
Portable -------------	(4)	4,084	3,886	3,904	4,225	3,875
Stationary -----------	(4)	1,009	1,044	1,073	1,037	916
Total ------------	649	5,093	4,930	4,977	5,262	4,791
Shuttle cars:						
Cable reel -----------	(4)	(4)	(4)	2,144	2,782	3,191
Battery --------------	(4)	(4)	(4)	623	512	567
Total ------------	(4)	(4)	(4)	2,767	3,294	3,758
Mother conveyors -------	(4)	457	755	860	1,013	1,094
Animals ---------------	36,352	10,185	10,834	10,313	10,033	7,478

1/ Exclusive of lignite and Virginia semianthracite mines in 1946, 1948, and 1949.
2/ Includes combination trolley and battery locomotives.
3/ Revised.
4/ Data not available.

TABLE 17.--Number of locomotives used in underground bituminous-coal and lignite mines, in the United States, in selected years, by States 1/

State	Trolley						Battery					
	1924 2/	1946	1948	1949	1950	1951	1924	1946	1948	1949	1950	1951
Alabama	318	556	589	500	456	437	29	5	4	6	5	6
Alaska	---	6	6	---	---	---	---	8	3	12	12	12
Arkansas	7	17	34	17	13	9	2	12	14	18	24	22
Colorado	123	176	143	136	137	120	20	83	83	80	80	69
Illinois	1,238	1,084	1,081	1,072	952	868	304	340	270	283	296	254
Indiana	385	284	313	287	290	282	99	4	4	4	1	---
Iowa	62	27	30	15	13	10	2	1	---	---	1	---
Kansas	25	3	---	---	---	---	38	2	2	2	2	2
Kentucky	1,315	1,905	2,236	2,017	1,924	1,899	137	65	52	40	28	62
Maryland	81	51	35	40	33	11	4	8	10	2	2	2
Michigan	34	14	2	2	2	2	5	---	---	---	---	---
Missouri	12	3	2	6	3	3	9	3	1	3	3	2
Montana:												
Bituminous	59	81	53	57	53	61	3	---	---	---	1	1
Lignite	---	---	---	---	---	---	---	---	---	---	---	---
Total Montana	59	81	53	57	53	61	3	---	---	---	1	1
New Mexico	74	32	33	40	38	31	2	41	32	31	33	26
North Dakota	5	---	---	---	7	8	---	---	---	---	---	---
Ohio	692	556	541	528	507	469	88	34	9	12	16	16
Oklahoma	9	20	23	17	14	11	8	2	4	9	7	7
Oregon	---	1	---	---	---	---	---	---	---	---	---	---
Pennsylvania	3,735	3,525	3,656	3,589	3,492	3,374	276	207	197	202	218	192
Tennessee	188	220	205	200	219	216	12	1	---	1	3	3
Texas	10	---	---	---	---	---	3	---	---	---	---	---
Utah	75	187	185	190	194	198	1	24	25	27	26	25
Virginia	478	581	641	642	699	677	36	5	4	9	3	9
Washington	71	56	41	43	44	45	15	5	2	4	5	6
West Virginia	3,665	4,517	4,551	4,505	4,554	4,428	419	155	185	180	176	177
Wyoming	104	208	217	187	178	168	3	6	3	3	7	7
Total	12,765	14,110	14,617	14,090	13,822	13,327	1,515	1,011	904	928	949	900
	Other types						Total					
Alabama	47	2	2	4	3	---	394	563	595	510	464	443
Alaska	---	---	---	---	---	---	---	14	9	12	12	12
Arkansas	4	---	---	---	---	1	13	29	48	35	37	32
Colorado	10	2	---	1	2	2	153	261	226	217	219	191
Illinois	21	10	---	1	2	2	1,563	1,434	1,351	1,356	1,250	1,124
Indiana	16	2	1	2	1	---	500	290	318	293	292	282
Iowa	2	3	1	1	2	1	66	31	31	16	16	11
Kansas	16	---	---	---	---	---	79	5	2	2	2	2
Kentucky	13	8	10	10	6	2	1,465	1,978	2,298	2,067	1,958	1,963
Maryland	5	3	1	1	---	---	90	62	46	43	35	13
Michigan	---	---	---	---	---	---	39	14	2	2	2	2
Missouri	2	---	---	---	1	1	23	6	3	9	7	6
Montana:												
Bituminous	2	---	---	---	---	---	64	81	53	57	54	62
Lignite	---	---	---	---	---	---	---	---	---	---	---	---
Total Montana	2	---	---	---	---	---	64	81	53	57	54	62
New Mexico	2	1	---	---	---	---	78	74	65	71	71	57
North Dakota	3	---	---	---	---	---	8	---	---	---	7	8
Ohio	6	7	9	9	7	2	786	597	559	549	530	487
Oklahoma	---	3	1	---	1	---	17	25	28	26	22	18
Oregon	---	---	---	---	---	---	---	1	---	---	---	---
Pennsylvania	139	41	32	15	18	23	4,150	3,773	3,885	3,806	3,728	3,589
Tennessee	31	3	---	---	---	---	231	224	205	201	222	219
Texas	8	---	---	---	---	---	21	---	---	---	---	---
Utah	---	---	1	1	2	1	76	211	211	218	222	224
Virginia	12	1	2	---	1	---	526	587	647	651	703	696
Washington	8	---	---	1	---	---	94	61	43	48	49	51
West Virginia	95	24	12	12	16	16	4,179	4,696	4,748	4,697	4,746	4,621
Wyoming	1	---	2	1	---	---	108	214	222	191	185	175
Total	443	110	74	59	62	51	14,723	15,231	15,595	15,077	14,833	14,278

1/ Exclusive of lignite and Virginia semianthracite mines in 1946, 1948, and 1949.
2/ Includes combination trolley and battery locomotives.

TABLE 18.--Number of animals, rope haulage units, and shuttle cars used in underground bituminous-coal and lignite mines, in the United States, in selected years, by States 1/

State	Animals						Shuttle cars								
							Cable reel			Battery			Total		
	1924	1946	1948	1949	1950	1951	1949	1950	1951	1949	1950	1951	1949	1950	1951
Alabama	1,928	471	595	375	290	250	102	102	130	27	24	12	129	126	142
Alaska	21	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Arizona	---	1	2	3	2	2	---	---	---	---	---	---	---	---	---
Arkansas	317	35	51	42	34	33	---	---	---	---	---	---	---	---	---
California	6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Colorado	1,703	389	334	329	301	289	13	24	25	26	26	26	39	50	51
Georgia	13	1	2	10	10	2	---	1	---	---	---	---	---	1	---
Idaho	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Illinois	4,378	755	473	502	484	421	269	331	410	91	32	37	360	363	447
Indiana	1,744	129	92	79	62	55	42	70	65	61	62	66	103	132	131
Iowa	979	208	146	217	191	163	---	---	---	---	---	---	---	---	---
Kansas	522	39	32	30	21	15	---	---	---	---	---	---	---	---	---
Kentucky	2,980	2,583	3,641	4,030	4,002	2,149	424	524	521	79	40	50	503	564	571
Maryland	299	195	177	116	114	104	---	---	3	---	---	---	---	---	3
Michigan	95	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Missouri	317	88	63	61	59	52	---	---	---	---	---	---	---	---	---
Montana:															
Bituminous	271	25	9	12	8	7	3	9	3	---	---	---	3	9	3
Lignite	---	---	---	---	5	3	---	---	---	---	2	2	---	2	2
Total Montana	271	25	9	12	13	10	3	9	3	---	2	2	3	11	5
Nebraska	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---
New Mexico	449	33	15	12	22	27	11	11	---	---	---	---	11	11	---
North Carolina	6	---	---	5	---	---	---	---	---	---	---	---	---	---	---
North Dakota	173	---	---	---	26	23	---	---	---	---	---	---	---	---	---
Ohio	2,493	456	474	410	393	372	106	115	151	10	8	6	116	123	157
Oklahoma	548	46	55	41	26	20	---	2	2	---	---	---	---	2	2
Oregon	4	1	---	---	---	---	---	---	---	---	---	---	---	---	---
Pennsylvania	8,843	2,918	2,796	2,311	2,185	1,736	328	439	536	151	181	151	479	620	687
South Dakota	16	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tennessee	649	132	299	151	126	184	34	43	47	---	---	---	34	43	47
Texas	157	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Utah	373	53	44	66	46	30	74	104	117	17	18	14	91	122	131
Virginia	478	229	211	100	151	265	64	92	91	12	4	9	76	96	100
Washington	149	35	39	27	23	18	---	---	10	---	---	---	---	---	10
West Virginia	5,906	1,346	1,269	1,378	1,446	1,252	668	904	1,067	137	103	182	805	1,007	1,249
Wyoming	533	17	15	6	6	6	6	11	13	12	12	12	18	23	25
Total	36,352	10,185	10,834	10,313	10,033	7,478	2,144	2,782	3,191	623	512	567	2,767	3,294	3,758

State	Rope-haulage units														
	Portable					Stationery					Total				
	1946	1948	1949	1950	1951	1946	1948	1949	1950	1951	1946	1948	1949	1950	1951
Alabama	50	111	80	62	11	80	90	99	95	46	130	201	179	157	57
Alaska	---	---	---	---	---	1	---	---	---	---	1	---	---	---	---
Arizona	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Arkansas	12	3	6	6	10	41	27	33	30	25	53	30	39	36	35
California	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Colorado	43	89	84	71	77	137	89	96	99	67	180	178	180	170	144
Georgia	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Idaho	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Illinois	4	---	1	3	6	56	24	29	37	56	60	24	30	40	62
Indiana	2	1	---	---	---	12	8	10	13	13	14	9	10	13	13
Iowa	---	---	1	1	1	10	8	9	17	13	10	8	10	18	14
Kansas	---	---	---	---	---	5	1	3	1	2	5	1	3	1	2
Kentucky	187	115	86	149	138	71	50	47	106	83	258	165	133	255	221
Maryland	1	---	6	7	2	2	---	6	9	6	3	---	12	16	8
Michigan	---	---	---	---	---	1	---	---	---	---	1	---	---	---	---
Missouri	---	---	---	---	---	6	---	3	---	3	6	---	3	---	3
Montana:															
Bituminous	5	---	---	2	2	3	2	4	7	5	8	2	4	9	7
Lignite	---	---	---	---	---	---	---	---	---	1	---	---	---	---	1
Total Montana	5	---	---	2	2	3	2	4	7	6	8	2	4	9	8
Nebraska	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
New Mexico	1	---	---	---	---	27	23	23	25	22	28	23	23	25	22
North Carolina	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
North Dakota	---	---	---	---	---	---	---	---	1	1	---	---	---	1	1
Ohio	10	6	15	13	15	32	26	23	31	23	42	32	38	44	38
Oklahoma	2	1	9	1	6	19	4	9	8	4	21	5	18	9	10
Oregon	1	---	---	---	---	1	---	---	---	---	2	---	---	---	---
Pennsylvania	3,582	3,215	3,183	3,401	2,995	271	439	413	282	298	3,853	3,654	3,596	3,683	3,293
South Dakota	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tennessee	7	5	27	20	15	20	11	14	13	12	27	16	41	33	27
Texas	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Utah	14	20	39	29	31	40	47	47	47	38	54	67	86	76	69
Virginia	12	12	37	28	41	6	28	15	30	25	18	40	52	58	66
Washington	25	3	5	8	6	31	17	16	18	18	56	20	21	26	24
West Virginia	115	185	204	308	396	95	60	97	91	92	210	245	301	399	488
Wyoming	11	120	121	116	123	42	90	77	77	63	53	210	198	193	186
Total	4,084	3,886	3,904	4,225	3,875	1,009	1,044	1,073	1,037	916	5,093	4,930	4,977	5,262	4,791

1/ Exclusive of lignite and Virginia semianthracite mines in 1946, 1948, and 1949.

TABLE 19.—Number and production of underground bituminous-coal mines using "Mother" conveyors in the United States, 1945-51 by States 1/

State	Number of mines							Production (net tons)						
	1945	1946	1947	1948	1949	1950	1951	1945	1946	1947	1948	1949	1950	1951
Alabama--------	5	6	6	5	7	9	8	498,317	520,615	686,729	1,167,660	978,619	1,485,257	1,469,411
Arkansas-------	1	1	1	2	3	3	3	(2)	(2)	(2)	(2)	138,626	156,925	131,841
Colorado-------	1	1	2	2	2	3	4	(2)	(2)	(2)	(2)	(2)	132,827	140,910
Illinois-------	11	12	14	14	16	16	19	2,558,383	2,586,543	3,533,001	3,741,776	4,035,589	5,323,088	6,841,250
Indiana--------	1	1	1	3	3	6	5	(2)	(2)	(2)	1,491,546	898,131	2,292,315	1,427,499
Iowa-----------	1	1	1	1	1	--	--	(2)	(2)	(2)	(2)	(2)	--	--
Kentucky-------	22	27	28	39	46	68	63	10,760,623	10,628,947	13,290,081	13,126,630	11,739,083	16,081,858	18,609,823
Maryland-------	--	--	1	2	3	2	--	--	--	(2)	(2)	216,129	66,444	--
Michigan-------	1	1	--	--	--	--	--	(2)	(2)	--	--	--	--	--
Ohio-----------	7	9	10	15	13	13	10	4,018,625	3,905,338	3,988,327	4,421,341	2,855,289	3,919,901	3,494,060
Oklahoma-------	4	2	2	3	5	4	3	225,690	(2)	(2)	278,515	561,705	724,174	447,218
Pennsylvania---	17	25	35	44	49	57	61	6,451,575	7,850,804	16,014,605	15,756,209	12,352,501	17,400,543	15,092,426
Tennessee------	4	4	3	7	6	7	7	386,790	334,445	522,812	663,406	514,377	825,786	909,782
Utah-----------	1	3	3	3	3	4	6	(2)	985,701	1,702,639	1,563,867	1,189,614	1,335,004	1,653,844
Virginia-------	4	7	8	13	13	14	13	1,146,475	1,959,204	3,237,838	4,354,126	2,857,520	2,972,715	3,464,870
West Virginia--	34	58	81	114	138	162	165	9,663,023	14,581,910	24,731,618	33,538,748	28,990,258	36,886,785	43,231,047
Wyoming--------	3	3	3	3	6	6	5	2,108,049	1,539,055	1,558,938	1,115,044	2,508,651	2,810,022	2,679,022
Undistributed--	--	--	--	--	--	--	--	2,372,307	1,130,148	1,424,332	602,493	111,621	--	--
Total------	117	161	199	270	314	374	372	40,189,857	46,022,710	70,690,920	81,821,361	69,947,713	92,413,644	99,643,003

1/ Includes all mines using belt conveyors, other than main slope conveyors, 500 ft. and over in length, for underground transportation of coal. Excludes lignite and Virginia semianthracite mines in 1945 to 1949, inclusive.

2/ Included under "Undistributed."

TABLE 20.--"Mother" conveyors in use in underground bituminous-coal mines in the United States, by States, 1945-1951 1/

Number of units

State	1945	1946	1947	1948	1949	1950	1951
Alabama	10	12	14	19	22	23	19
Arkansas	6	6	6	8	11	11	9
Colorado	2	2	3	2	3	8	6
Illinois	22	26	27	31	38	39	51
Indiana	1	1	1	3	3	11	8
Iowa	4	4	4	4	4	--	—
Kentucky	88	99	104	135	143	195	188
Maryland	--	--	3	4	6	5	—
Michigan	1	1	--	--	--	--	--
Ohio	19	18	23	36	34	32	30
Oklahoma	9	2	2	4	10	11	6
Pennsylvania	48	74	115	136	143	174	183
Tennessee	10	12	12	14	13	15	15
Utah	7	9	9	10	10	12	18
Virginia	7	20	19	23	27	30	29
West Virginia	117	163	244	318	382	437	525
Wyoming	8	8	8	8	11	10	7
Total	359	457	594	755	860	1,013	1,094

Average length (feet)

State	1945	1946	1947	1948	1949	1950	1951
Alabama	1,420	1,450	1,600	1,647	1,459	1,472	1,297
Arkansas	1,000	1,000	1,000	1,205	1,120	1,120	1,202
Colorado	600	600	667	800	1,050	706	1,208
Illinois	1,150	1,198	1,443	1,298	1,370	1,354	1,448
Indiana	750	750	750	1,383	1,497	1,095	981
Iowa	900	900	900	900	900	--	—
Kentucky	1,574	1,624	1,515	1,406	1,437	1,482	1,438
Maryland	--	--	800	1,000	1,400	1,880	—
Michigan	800	800	--	--	--	--	--
Ohio	1,516	1,406	1,657	1,563	1,747	1,886	1,832
Oklahoma	722	1,550	1,550	1,075	1,180	1,591	1,583
Pennsylvania	1,763	1,666	1,514	1,474	1,464	1,530	1,857
Tennessee	1,135	1,167	1,383	1,707	1,738	1,275	1,273
Utah	1,500	1,389	1,444	1,450	1,460	1,262	972
Virginia	1,386	1,565	1,347	1,613	1,781	1,795	1,830
West Virginia	1,418	1,465	1,478	1,489	1,573	1,593	1,548
Wyoming	1,038	1,038	1,038	1,038	1,266	1,420	2,029
Average	1,438	1,484	1,470	1,460	1,514	1,538	1,568

Total length (miles)

State	1945	1946	1947	1948	1949	1950	1951
Alabama	2.7	3.3	4.2	5.9	6.1	6.4	4.7
Arkansas	1.1	1.1	1.1	1.8	2.3	2.3	2.0
Colorado	0.2	0.2	0.4	0.3	0.6	1.1	1.4
Illinois	4.8	5.9	7.4	7.6	9.9	10.0	14.0
Indiana	0.1	0.1	0.1	0.8	0.9	2.3	1.5
Iowa	0.7	0.7	0.7	0.7	0.7	--	—
Kentucky	26.2	30.5	29.8	35.9	38.9	54.7	51.2
Maryland	--	--	0.5	0.8	1.6	1.8	—
Michigan	0.2	0.2	--	--	--	--	—
Ohio	5.5	4.8	7.2	10.7	11.2	11.4	10.4
Oklahoma	1.2	0.6	0.6	0.8	2.2	3.3	1.8
Pennsylvania	16.0	23.3	33.0	38.0	39.7	50.4	64.4
Tennessee	2.1	2.7	3.1	4.5	4.3	3.6	3.6
Utah	2.0	2.4	2.5	2.7	2.8	2.9	3.3
Virginia	1.8	5.9	4.8	7.0	9.1	10.2	10.1
West Virginia	31.4	45.2	68.3	89.7	113.8	131.8	153.9
Wyoming	1.6	1.6	1.6	1.6	2.6	2.7	2.7
Total	97.6	128.5	165.3	208.8	246.7	294.9	325.0

1/ Includes all belt conveyors, 500 ft. and over in length, used for underground transportation of coal, except main slope conveyors. Excludes lignite and Virginia semianthracite mines in 1945 to 1949, inclusive.

TABLE 21.--Growth of strip mining at bituminous-coal and lignite mines in the United States, 1914-51

Year	Production (thousand net tons)			Percent of total mined by stripping	Average tons per man per day			Average value per ton, f.o.b. mine			Number of strip mines	Number of power shovels and draglines
	Under-ground mines	Strip mines	Total		Under-ground mines 1/	Strip mines 2/	Total	Under-ground mines 1/	Strip mines 2/	Total		
1914 ----	421,423	1,281	422,704	0.3	3.71	5.06	3.71	(3)	(3)	$1.17	4/ 35	48
1915 ----	439,792	2,832	442,624	.6	3.90	5.81	3.91	$1.13	$1.18	1.13	4/ 60	87
1916 ----	498,587	3,933	502,520	.8	3.88	6.67	3.90	1.32	1.51	1.32	4/ 79	111
1917 ----	546,001	5,790	551,791	1.0	3.75	6.52	3.77	2.26	2.34	2.26	4/ 126	182
1918 ----	571,098	8,288	579,386	1.4	3.76	6.81	3.78	2.58	2.54	2.58	4/ 165	276
1919 ----	460,225	5,635	465,860	1.2	3.82	6.21	3.84	2.49	2.33	2.49	4/ 168	287
1920 ----	559,807	8,860	568,667	1.5	3.97	7.20	4.00	3.74	4.12	3.75	4/ 174	312
1921 ----	410,865	5,057	415,922	1.2	4.18	8.28	4.20	2.89	2.87	2.89	4/ 155	279
1922 ----	412,059	10,209	422,268	2.4	4.24	8.09	4.28	3.02	3.07	3.02	272	379
1923 ----	552,625	11,940	564,565	2.1	4.43	9.32	4.47	2.69	2.31	2.68	263	442
1924 ----	470,080	13,607	483,687	2.8	4.50	9.91	4.56	2.20	2.00	2.20	234	420
1925 ----	503,182	16,871	520,053	3.2	4.45	11.18	4.52	2.05	1.84	2.04	227	389
1926 ----	556,444	16,923	573,367	3.0	4.42	11.13	4.50	2.07	1.89	2.06	237	410
1927 ----	499,385	18,378	517,763	3.6	4.47	11.06	4.55	1.99	1.90	1.99	255	455
1928 ----	480,956	19,789	500,745	4.0	4.61	13.02	4.73	1.87	1.69	1.86	250	415
1929 ----	514,721	20,268	534,989	3.8	4.73	14.08	4.85	1.79	1.57	1.78	200	411
1930 ----	447,684	19,842	467,526	4.3	4.93	16.21	5.06	1.71	1.54	1.70	218	341
1931 ----	363,157	18,932	382,089	5.0	5.12	17.68	5.30	1.54	1.51	1.54	235	314
1932 ----	290,069	19,641	309,710	6.3	4.99	16.95	5.22	1.31	1.32	1.31	255	332
1933 ----	315,360	18,270	333,630	5.5	4.60	13.59	4.78	1.34	1.33	1.34	289	389
1934 ----	338,578	20,790	359,368	5.8	4.23	13.28	4.40	1.76	1.49	1.75	344	458
1935 ----	348,726	23,647	372,373	6.4	4.32	12.01	4.50	1.79	1.47	1.77	368	507
1936 ----	410,962	28,126	439,088	6.4	4.42	13.91	4.62	1.77	1.49	1.76	381	562
1937 ----	413,780	31,751	445,531	7.1	(3)	(3)	4.69	(3)	(3)	1.94	449	(3)
1938 ----	318,138	30,407	348,545	8.7	4.60	15.00	4.89	(3)	(3)	1.95	465	737
1939 ----	357,133	37,722	394,855	9.6	4.92	14.68	5.25	1.88	1.49	1.84	537	914
1940 ----	417,604	43,167	460,771	9.4	4.86	15.63	5.19	1.94	1.56	1.91	638	1,071
1941 ----	459,078	55,071	514,149	10.7	4.83	15.59	5.20	2.23	1.79	2.19	769	1,321
1942 ----	515,490	67,203	582,693	11.5	4.74	15.52	5.12	2.41	1.90	2.36	834	1,438
1943 ----	510,492	79,685	590,177	13.5	4.89	15.15	5.38	2.75	2.28	2.69	1,004	1,839
1944 ----	518,678	100,898	619,576	16.3	5.04	15.89	5.67	3.01	2.48	2.92	1,240	2,312
1945 ----	467,630	109,987	577,617	19.0	5.04	15.46	5.78	3.16	2.65	3.06	1,370	2,439
1946 ----	420,958	112,964	533,922	21.1	5.43	15.73	6.30	3.59	2.87	3.44	1,445	2,744
1947 ----	491,229	139,395	630,624	22.1	5.49	15.93	6.42	4.35	3.47	4.16	1,750	3,254
1948 ----	460,012	139,506	599,518	23.3	5.31	15.28	6.26	5.26	4.11	4.99	1,971	3,712
1949 ----	331,823	106,045	437,868	24.2	5.42	15.33	6.43	5.18	3.94	4.88	1,761	3,576
1950 ----	392,844	123,467	516,311	23.9	5.75	15.66	6.77	5.15	3.87	4.84	1,870	3,877
1951 ----	416,047	117,618	533,665	22.0	6.08	16.02	7.04	5.21	3.88	4.92	1,784	3,810

1/ Computed by deducting "Strip mines" data from "Total."

2/ Includes power strip pits proper and excludes horse stripping operations and mines combining stripping and underground in the same operation for the years 1914-42, inclusive. The years 1943-51, inclusive, include data on all strip mines.

3/ Data not available.

4/ Exclusive of horse stripping operations.

TABLE 22. - Number and production of bituminous-coal and lignite strip mines in the United States, 1941-51, and details of stripping and loading equipment in use

Year	Number of strip mines	Mines by stripping (net tons)	Number of power shovels and drag lines in use, classified by dipper or bucket capacity in cu. yds.					Number in use		
			Less than 3	3-5 inclusive	6-12 inclusive	More than 12	Total	Power Shovels	Dragline excavators	Carry-all scrapers
1941	769	55,071,609	1,009	153	95	64	1,321	(1)	(1)	(1)
1942	834	67,202,663	1,114	159	97	68	1,438	(1)	(1)	(1)
1943	1,004	79,685,175	1,488	173	106	72	1,839	(1)	(1)	(1)
1944	1,240	100,898,376	1,900	225	113	74	2,312	(1)	(1)	(1)
1945	1,370	109,986,865	2,004	243	117	75	2,439	(1)	(1)	(1)
1946	1,445	112,963,717	2,256	302	112	74	2,744	2,406	338	263
1947	1,750	139,395,011	2,685	362	123	84	3,254	2,822	432	275
1948	1,971	139,505,920	3,048	446	130	88	3,712	3,177	535	362
1949	1,761	106,045,299	2,931	367	168	110	3,576	3,011	565	320
1950	1,870	123,466,564	3,182	416	170	109	3,877	3,247	630	286
1951	1,784	117,617,676	3,088	420	187	115	3,810	3,164	646	220

1/ Data not available.

TABLE 23.--Number and production of bituminous-coal and lignite strip mines, 1950-51, and details of stripping and loading equipment in use, 1951, by States

State	Number of strip mines		Mined by stripping (net tons)		Number of power shovels and draglines used in 1951 classified by dipper or bucket capacity in cu. yds.					Number in use in 1951		
	1950	1951	1950	1951	Less than 3	3 - 5 inclusive	6 - 12 inclusive	More than 12	Total	Power shovels	Dragline excavators	Carry-all scrapers
Alabama	46	39	1,888,038	1,894,022	83	16	1	—	100	81	19	16
Alaska	5	4	130,737	232,359	6	—	—	—	6	4	2	—
Arkansas	15	13	504,946	408,019	8	3	2	1	14	10	4	—
California and South Dakota (lignite)	3	3	37,483	32,007	4	—	—	—	4	2	2	1
Colorado	8	8	406,713	366,052	5	2	1	—	8	5	3	2
Illinois	81	63	17,612,423	18,296,516	63	36	32	41	172	104	68	5
Indiana	44	38	10,739,567	10,997,270	47	41	24	26	138	86	52	3
Iowa	37	41	1,190,511	1,151,186	67	17	—	—	84	46	38	6
Kansas	32	32	2,024,352	1,887,275	24	8	8	7	47	34	13	5
Kentucky:												
Eastern	72	62	2,510,358	2,630,610	108	2	1	—	111	110	1	2
Western	64	46	11,467,285	9,096,568	67	24	21	6	118	84	34	4
Total Kentucky	136	108	13,977,643	11,727,178	175	26	22	6	229	194	35	6
Maryland	22	25	161,054	166,088	24	—	—	—	24	20	4	—
Missouri	43	36	2,635,424	3,013,669	20	11	9	8	48	34	14	2
Montana:												
Bituminous	1	1	1,708,149	1,488,300	1	1	2	3	7	4	3	1
Lignite	1	1	9,030	6,313	1	—	—	—	1	1	—	—
Total Montana	2	2	1,717,179	1,494,613	2	1	2	3	8	5	3	1
North Dakota (lignite)	37	41	2,828,056	2,973,126	31	8	9	1	49	40	9	26
Ohio	303	291	22,775,193	21,609,661	565	72	31	13	681	583	98	48
Oklahoma	29	22	1,727,174	1,222,821	21	11	8	3	43	28	15	3
Pennsylvania	726	699	26,426,597	23,356,343	1,312	129	30	5	1,476	1,235	241	57
Tennessee	16	24	584,066	478,334	45	3	1	—	49	44	5	1
Texas (lignite)	1	—	18,169	—	—	—	—	—	—	—	—	—
Virginia	19	31	1,565,646	1,373,482	51	7	1	—	59	58	1	—
Washington	4	4	70,540	73,951	8	—	—	—	8	5	3	—
West Virginia	249	249	12,986,154	13,027,889	510	24	5	1	540	529	11	35
Wyoming	12	11	1,458,899	1,835,815	17	5	1	—	23	17	6	3
Total	1,870	1,784	123,466,564	117,617,676	3,088	420	187	115	3,810	3,164	646	220

TABLE 24.–Summary of operations at bituminous-coal and lignite strip mines using power drills in bank or overburden in the United States, 1946–51 by States

State	Number of mines using power drills in bank or overburden						Production from mines that drill bank or overburden (net tons)					
	1946	1947	1948	1949	1950	1951	1946	1947	1948	1949	1950	1951
Alabama	5	15	21	30	27	22	232,330	1,054,470	1,128,845	1,278,417	1,389,813	1,291,707
Alaska	---	---	2	1	1	1	---	---	(1/)	(1/)	(1/)	17,784
Arkansas	12	9	8	4	4	4	532,867	641,317	394,252	134,820	401,922	352,254
Colorado	1	1	1	4	3	4	(1/)	(1/)	(1/)	258,223	361,631	352,483
Illinois	30	31	35	40	33	33	12,191,538	16,142,769	15,850,741	12,304,913	15,618,835	15,466,661
Indiana	35	36	43	40	35	33	10,940,620	12,899,870	13,616,515	9,287,373	10,292,920	10,446,599
Iowa	10	10	17	18	23	22	429,266	494,880	561,054	595,048	990,782	886,129
Kansas	10	13	15	8	12	14	2,146,645	2,230,774	2,224,077	1,537,423	1,826,964	1,676,208
Kentucky	27	43	67	61	51	35	5,677,018	8,355,830	10,326,951	9,190,702	9,583,309	8,875,856
Maryland	3	3	3	---	---	1	131,447	47,718	37,337	---	---	21,903
Missouri	17	21	18	18	14	14	3,250,680	3,394,288	3,309,382	2,951,634	1,420,931	2,896,307
Montana:												
Bituminous	1	1	2	1	1	1	2,452,753	1,982,185	1,909,653	1,819,342	1,708,149	1,488,300
Lignite	---	---	---	---	---	---	---	---	---	---	---	---
Total	1	1	2	1	1	1	2,452,753	1,982,185	1,909,653	1,819,342	1,708,149	1,488,300
North Dakota:												
Lignite	1	1	1	1	4	9	(1/)	(1/)	(1/)	(1/)	238,364	2,200,439
Ohio	78	75	109	147	126	109	10,827,829	12,779,124	15,993,681	14,130,832	17,252,385	16,282,009
Oklahoma	12	15	14	14	15	12	1,395,909	1,724,683	1,734,081	1,695,835	1,520,847	932,321
Pennsylvania	182	184	232	198	194	202	15,199,370	18,139,942	18,155,261	11,325,573	12,835,812	11,291,891
South Dakota:												
Lignite	---	---	---	---	1	1	---	---	---	---	(1/)	26,972
Tennessee	1	2	10	9	6	8	(1/)	(1/)	606,068	336,783	357,302	245,314
Virginia	11	11	11	12	16	12	385,986	813,968	673,162	764,751	1,344,381	853,864
Washington	3	4	6	4	3	3	53,311	156,058	259,110	81,677	61,585	62,121
West Virginia	71	120	109	141	116	104	8,556,227	14,008,584	11,228,991	9,521,549	8,863,224	8,347,557
Wyoming	4	3	4	5	7	6	791,093	744,660	585,011	871,348	1,091,663	1,316,525
Undistributed	---	---	---	---	---	---	180,952	304,226	215,221	60,412	44,461	---
Total	514	598	728	756	692	650	75,375,841	95,915,346	98,809,393	78,146,655	87,205,280	85,331,204

State	Percentage of total strip production from mines that drill bank or overburden						Number of power drills used in bank or overburden							
												1951		
	1946	1947	1948	1949	1950	1951	1946	1947	1948	1949	1950	Horizontal	Vertical	Total
Alabama	12.8	54.1	58.3	71.6	73.6	68.2	7	26	53	53	49	29	11	40
Alaska	---	---	22.5	24.2	9.8	7.7	---	---	3	2	1	---	1	1
Arkansas	94.6	85.4	73.2	59.9	79.6	86.3	18	13	16	10	9	6	3	9
Colorado	75.0	62.4	54.6	82.9	88.9	96.3	1	1	2	5	6	4	2	6
Illinois	80.4	91.1	90.1	88.6	88.7	84.5	72	70	76	87	78	44	24	68
Indiana	92.5	90.9	98.0	96.8	95.8	95.0	67	69	88	92	85	60	24	84
Iowa	68.0	66.7	71.2	61.4	83.2	77.0	16	14	35	36	40	21	20	41
Kansas	94.0	90.2	93.6	80.9	90.2	88.8	15	18	22	13	16	13	10	23
Kentucky	77.2	79.0	83.4	88.7	68.6	75.7	47	72	120	111	106	41	39	80
Maryland	23.6	8.0	8.4	---	---	13.2	4	4	8	---	---	1	---	1
Missouri	97.3	88.3	90.1	89.1	53.9	96.1	24	32	30	25	24	15	7	22
Montana:														
Bituminous	100.0	98.3	100.0	100.0	99.5	100.0	5	3	4	4	4	1	3	4
Lignite	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	100.0	98.3	100.0	100.0	99.5	100.0	5	3	4	4	4	1	3	4
North Dakota:														
Lignite	1.6	1.3	0.5	1.5	8.4	74.0	1	1	1	1	4	2	7	9
Ohio	76.2	73.6	78.8	77.1	75.8	75.3	106	119	152	210	206	130	51	181
Oklahoma	83.5	74.8	74.4	82.5	88.1	76.2	13	23	13	24	20	16	5	21
Pennsylvania	48.0	48.9	50.8	50.9	48.6	48.3	241	231	309	272	277	189	94	283
South Dakota:														
Lignite	---	---	---	---	90.5	95.1	---	---	---	---	1	---	1	1
Tennessee	15.5	23.0	69.4	70.5	61.2	51.3	1	2	12	11	8	8	---	8
Virginia	58.9	71.5	47.5	71.2	85.9	62.2	13	17	16	26	38	16	5	21
Washington	54.6	79.3	99.4	67.1	87.3	84.0	5	10	10	4	4	---	4	4
West Virginia	57.3	63.7	59.3	69.3	68.3	64.1	105	147	215	262	214	132	76	208
Wyoming	79.7	58.7	55.2	80.9	74.8	71.7	3	3	10	8	11	9	1	10
Undistributed	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	66.7	68.8	72.3	73.7	70.6	72.5	764	875	1,195	1,256	1,201	737	388	1,125

1/Included under "Undistributed."

TABLE 25.--Haulage by truck from bituminous-coal and lignite strip mines to tipple or ramp, in the United States, 1948-51, by States 1/

State	Number of mines	Annual production (tons)	Average distance from mine to tipple or ramp (miles)	Number of trucks	Average capacity per truck (tons)	Average number of trips per truck per shift	Average distance each truck traveled per shift (miles)	Coal hauled per shift (ton-miles)
				1948				
Alabama	16	796,961	3.13	99	5.47	8.74	54.7	14,803
Arkansas	5	126,144	3.02	19	6.05	6.58	39.7	2,283
Illinois	14	2,061,263	2.52	94	10.93	10.48	52.8	27,141
Indiana	24	2,909,938	3.37	258	7.43	8.84	59.6	57,168
Iowa	8	374,156	4.31	35	4.93	8.91	76.8	6,621
Kansas	6	175,945	2.02	20	10.95	2/	2/	2,136
Kentucky	33	4,728,954	2.15	252	9.92	10.49	45.1	56,484
Maryland	5	43,260	4.01	21	7.43	4.19	33.6	2,622
Missouri	8	218,906	1.55	19	6.11	9.34	29.0	1,677
Ohio	95	10,465,897	4.01	798	8.00	8.45	67.8	216,099
Oklahoma	5	395,197	1.21	32	5.19	11.90	28.8	2,394
Pennsylvania	366	22,763,862	4.92	3,115	7.37	5.33	52.4	601,127
Tennessee	8	559,083	5.36	49	7.47	2/	2/	16,517
Virginia	10	584,260	3.42	97	7.03	4.45	30.4	10,384
Washington	3	188,293	1.18	12	9.58	2/	2/	961
West Virginia	113	9,643,292	4.22	1,135	8.21	6.33	53.4	248,824
Other States 3/	7	783,162	5.04	66	9.48	7.37	74.3	23,263
Total and average	726	56,818,573	4.13	6,121	7.74	6.60	54.5	1,290,504
				1949				
Alabama	22	853,665	3.86	116	6.24	8.68	67.0	24,280
Alaska	4	97,666	2.32	15	7.07	5.69	26.4	1,397
Arkansas	5	95,784	2.53	20	6.95	7.68	38.9	2,706
Illinois	14	903,322	3.22	93	10.17	8.29	53.4	25,259
Indiana	20	1,755,476	3.18	197	7.85	8.28	52.7	40,716
Iowa	15	441,101	4.02	57	5.70	5.60	45.0	7,303
Kansas	5	55,960	3.43	13	3.85	7.95	54.5	1,365
Kentucky	17	1,973,040	2.25	138	8.19	12.08	54.4	30,730
Missouri	4	164,223	1.82	14	7.00	7.70	28.0	1,371
Ohio	98	9,152,215	3.36	763	8.67	8.39	56.4	186,720
Oklahoma	8	613,020	2.35	49	5.24	12.89	60.6	7,762
Pennsylvania	338	15,030,995	5.10	2,864	7.54	5.21	53.1	574,672
Tennessee	8	295,208	5.11	62	7.41	4.24	43.3	9,942
Virginia	12	702,773	5.71	100	7.75	5.14	58.7	22,754
West Virginia	113	7,012,108	4.24	1,019	9.02	5.89	49.9	229,785
Wyoming	5	559,072	4.80	31	10.45	7.91	75.9	12,281
Other States 4/	4	213,462	1.77	25	10.20	7.16	25.3	3,236
Total and average	692	39,919,090	4.20	5,576	7.99	6.31	53.0	1,182,279
				1950				
Alabama	23	1,007,665	4.0	140	6.3	6.7	54.0	23,982
Alaska	3	119,860	1.9	9	8.4	10.9	41.6	1,553
Arkansas	4	401,922	2.1	19	7.4	14.4	57.5	4,216
Colorado	3	192,741	2.6	16	11.4	7.7	39.7	3,617
Illinois	18	597,447	3.4	87	6.8	7.6	51.1	15,118
Indiana	13	902,266	4.3	115	8.5	6.6	55.8	27,360
Iowa	22	733,958	3.2	79	6.0	5.6	35.5	9,330
Kansas	6	53,437	3.2	13	4.4	7.6	49.0	1,398
Kentucky	21	2,180,924	2.6	129	7.5	11.8	60.0	25,235
Maryland	3	15,845	2.0	11	8.0	2.6	10.8	474
Missouri	8	197,075	1.6	23	5.1	9.7	30.8	1,817
North Dakota (lig.)	11	314,643	1.0	28	5.7	8.6	17.6	1,410
Ohio	114	10,679,335	4.1	874	8.6	8.2	68.0	255,084
Oklahoma	9	570,323	4.5	61	6.6	9.6	95.7	17,378
Pennsylvania	308	15,969,284	5.2	2,461	7.7	5.3	55.4	524,170
Tennessee	10	389,576	3.2	64	8.0	5.2	33.6	8,652
Virginia	15	993,567	5.5	114	8.3	6.6	71.7	30,355
Washington	3	49,268	1.3	13	7.8	2.4	6.2	297
West Virginia	102	8,248,670	4.8	1,014	9.1	5.8	55.3	256,240
Wyoming	6	241,587	6.3	30	7.4	6.1	77.0	8,512
Other States 5/	3	43,203	.9	8	5.6	3.7	6.7	184
Total and average	705	43,902,596	4.5	5,308	8.0	6.3	56.7	1,216,382
				1951				
Alabama	22	1,080,866	3.8	135	6.5	7.9	60.0	26,133
Alaska	3	183,591	2.2	9	8.4	17.4	76.0	2,883
Arkansas	4	352,254	1.9	21	7.6	10.7	40.7	3,231
Colorado	5	360,065	2.1	18	13.8	8.0	34.0	4,236
Illinois	16	437,023	1.9	55	6.8	6.9	25.8	4,797
Indiana	12	796,817	3.8	96	8.4	7.2	54.1	21,727
Iowa	27	745,758	2.8	88	6.0	5.8	32.9	8,697
Kansas	6	41,198	3.1	15	4.8	4.2	25.9	933
Kentucky	20	1,741,770	1.8	135	8.5	9.1	32.5	18,681
Maryland	4	31,361	3.7	14	7.3	2.2	16.5	839
Missouri	5	121,692	1.4	15	6.2	8.0	22.9	1,066
No. Dakota (lignite)	15	667,642	.9	36	6.9	11.0	18.9	2,361
Ohio	109	11,153,914	4.6	925	9.2	6.6	61.3	260,361
Oklahoma	9	556,303	5.4	63	7.0	8.6	93.1	20,497
Pennsylvania	344	15,035,186	5.4	2,394	7.9	4.7	50.2	476,873
Tennessee	7	242,467	4.0	46	8.3	5.9	47.2	9,005
Virginia	10	399,061	7.8	81	7.9	4.1	63.1	20,163
Washington	3	63,883	1.2	12	9.0	3.6	8.8	471
West Virginia	102	7,471,557	5.0	938	9.3	5.5	55.1	239,763
Wyoming	4	92,738	7.8	21	7.9	5.3	82.1	6,772
Other States 5/	3	36,942	1.3	10	5.3	3.1	8.1	214
Total and average	730	41,612,088	4.7	5,127	8.3	5.6	52.9	1,129,703

1/ Exclusive of lignite mines in 1948 and 1949.
2/ Included in total.
3/ Alaska, Colorado, Montana, and Wyoming.
4/ Colorado, Maryland, and Washington.
5/ California, Montana, and South Dakota (lignite).

TABLE 26.--Haulage by tractor-trailer from bituminous-coal and lignite strip mines to tipple or ramp, in the United States, 1948-51, by States 1/

State	Number of mines	Annual production (tons)	Average distance from mine to tipple or ramp (miles)	Number of haulage units	Average capacity per unit (tons)	Average number of trips per unit per shift	Average distance each unit traveled per shift (miles)	Coal hauled per shift (ton-miles)
1948								
Arkansas	3	270,204	5.67	25	13.60	5.34	60.6	10,299
Illinois	19	12,181,285	2.83	181	27.97	10.38	58.8	148,897
Indiana	13	7,132,877	3.07	119	28.54	9.17	56.3	95,643
Kentucky	6	2,198,234	1.26	36	24.81	14.41	36.3	16,229
Missouri	5	1,797,036	3.36	32	34.69	6.52	43.8	24,363
Ohio	5	2,223,458	2.65	42	21.52	9.99	52.9	23,914
Oklahoma	5	1,372,790	2.53	29	20.03	10.43	52.8	15,316
Other States 2/..	3	973,367	2.38	15	31.33	8.45	40.2	9,462
Total and average	59	28,149,251	2.76	479	26.63	9.78	54.0	344,123
1949								
Illinois	20	8,632,321	3.37	163	34.25	9.37	63.2	176,143
Indiana	13	4,554,665	2.72	110	31.47	7.80	42.4	73,504
Kansas	3	561,492	2.27	18	26.00	7.16	32.5	7,603
Kentucky.........	6	3,628,262	1.59	53	31.60	10.77	34.2	28,701
Missouri	6	2,392,947	2.18	36	34.31	9.07	39.5	24,415
Ohio	5	1,778,044	2.47	40	21.68	10.60	52.4	22,754
Oklahoma	6	1,021,318	2.08	34	19.81	9.39	39.1	13,144
Other States 3/..	2	555,300	2.70	18	16.67	9.84	53.1	7,978
Total and average	61	23,124,349	2.72	472	30.22	9.14	49.7	354,242
1950								
Illinois	22	13,033,370	3.3	227	29.1	9.5	63.3	209,365
Indiana	14	7,161,034	2.5	123	29.3	9.4	47.5	85,498
Kansas	6	1,459,686	2.4	41	34.8	4.9	23.6	16,466
Kentucky.........	8	5,099,337	1.9	69	32.8	10.9	40.6	45,901
Missouri	3	526,843	3.0	13	30.0	6.0	36.1	6,995
No. Dakota(lignite)	6	2,281,307	1.7	34	20.0	16.2	54.9	19,100
Ohio	5	2,112,859	2.4	38	22.5	13.3	63.2	27,025
Oklahoma	3	424,988	3.5	18	20.8	8.0	55.7	10,432
Other States 4/..	5	696,184	2.9	26	22.5	6.5	37.1	10,865
Total and average	72	32,795,608	2.7	589	28.3	9.5	51.3	431,647
1951								
Illinois	26	17,019,444	4.0	245	28.8	10.0	79.5	280,775
Indiana	17	9,409,145	3.4	163	29.1	8.1	55.4	131,639
Kansas	5	673,956	2.6	33	29.8	4.4	23.0	11,295
Kentucky	9	5,662,390	2.1	74	33.4	10.3	43.9	54,299
Missouri	3	606,765	2.4	15	22.7	8.5	40.7	6,909
No. Dakota(lignite)	6	2,174,323	2.2	40	20.0	14.0	61.1	24,466
Ohio	5	1,824,431	2.0	34	23.3	12.0	46.9	18,549
Other States 5/	3	429,939	1.6	12	21.2	9.5	30.0	3,799
Total and average	74	37,800,393	3.2	616	28.3	9.4	60.9	531,731

1/ Exclusive of lignite mines in 1948 and 1949.
2/ Kansas and Pennsylvania.
3/ Iowa and Wyoming.
4/ Alabama, Colorado, Iowa, and Pennsylvania.
5/ Iowa, Oklahoma, and Pennsylvania.

TABLE 27.--Haulage by combination truck and tractor-trailer from bituminous-coal and lignite strip mines to tipple or ramp, in the United States, 1948-51, by States 1/

State	Number of mines	Annual production (tons)	Average distance from mine to tipple or ramp (miles)	Trucks		Tractor-trailers		Average number of trips per unit per shift	Average distance each unit traveled per shift (miles)	Coal hauled per shift (ton-miles)
				Number	Average capacity per truck (tons)	Number	Average capacity per unit (tons)			
					1948					
Illinois and Indiana	4	3,207,416	2.27	21	18.24	31	25.75	10.81	49.1	28,909
Kentucky -----------	3	1,598,579	1.57	8	21.50	23	21.65	11.54	36.2	12,140
Missouri -----------	3	715,325	3.24	14	21.43	10	31.00	4.89	31.7	9,674
Ohio ---------------	14	3,109,439	4.19	152	8.45	67	16.08	5.56	46.6	54,949
Pennsylvania -------	7	1,548,192	5.36	68	8.09	29	13.41	7.54	80.8	37,944
West Virginia ------	7	1,525,704	6.98	85	10.90	25	20.94	5.52	77.1	55,827
Other States 2/ ----	9	777,920	4.23	58	7.83	23	15.87	5.08	43.0	17,619
Total and average	47	12,482,575	3.89	406	10.03	208	19.04	6.95	54.1	217,062
					1949					
Illinois and Indiana	6	3,357,460	2.85	43	19.83	53	26.40	7.66	43.7	49,242
Kentucky -----------	3	650,360	2.38	13	17.23	12	27.08	7.10	33.8	9,270
Missouri -----------	3	625,371	2.65	7	20.71	11	32.45	6.24	33.1	8,313
Ohio ---------------	31	3,082,565	4.54	164	9.12	75	15.84	6.67	60.6	81,315
Pennsylvania -------	8	1,176,841	4.99	62	8.80	43	13.00	6.63	66.2	36,559
West. Virginia ------	7	655,754	6.70	62	9.81	28	10.39	6.41	85.9	38,528
Other States 3/ ----	7	637,766	2.93	42	9.72	31	15.85	3.74	21.9	9,853
Total and average	65	10,186,117	3.97	393	10.89	253	18.22	6.60	52.4	233,080
					1950					
Illinois and Indiana	5	2,351,304	3.3	57	7.1	37	29.1	7.2	47.5	35,315
Kansas and Missouri	3	621,322	2.4	10	12.8	13	28.1	7.8	37.4	9,186
Ohio ---------------	18	5,036,000	4.9	243	8.8	87	20.0	6.4	62.1	120,637
Oklahoma -----------	3	282,499	6.0	13	5.5	16	14.5	4.4	52.3	7,950
Pennsylvania -------	6	1,209,785	5.0	50	8.5	32	14.0	6.2	62.2	27,255
West Virginia ------	5	260,530	7.0	44	8.3	17	16.6	3.6	25.6	16,689
Other States 4/ ----	5	2,207,089	1.8	21	10.5	27	18.5	13.3	47.9	16,863
Total and average	45	11,968,529	4.0	438	8.6	229	20.3	6.9	55.2	233,895
					1951					
Illinois and Indiana	4	1,106,050	3.05	52	6.31	16	28.25	5.73	34.95	13,663
Kansas and Missouri	3	650,424	1.61	10	13.50	13	26.62	8.05	25.92	6,213
Ohio ---------------	10	2,498,510	5.31	80	8.75	60	20.13	6.56	69.67	66,437
Oklahoma -----------	3	222,743	4.93	12	5.42	13	11.62	4.90	48.31	5,213
Pennsylvania -------	5	887,286	4.28	41	9.54	30	13.57	4.87	41.69	16,627
West Virginia ------	5	989,834	2.83	34	10.82	10	22.90	7.45	42.17	12,591
Other States 4/ ----	5	1,659,701	1.62	29	9.66	30	17.07	8.57	27.77	10,992
Total and average	35	8,014,548	3.56	258	8.79	172	19.22	6.65	47.35	131,736

1/ Exclusive of lignite mines in 1948 and 1949.
2/ Alabama, Arkansas, Iowa, Kansas, Oklahoma, and Virginia.
3/ Alabama, Colorado, Kansas, Oklahoma, and Tennessee.
4/ Alabama, Kentucky, Virginia, and Wyoming.

TABLE 28.--Summary of method of haulage from bituminous-coal and lignite strip mines to tipple or ramp, in the United States, 1948-51, by States 1/

State	Truck	Tractor-trailer	Combination truck and tractor-trailer	Rail and rail and truck or tractor-trailer	Not specified 2/	Total
1948						
Illinois ----------	2,061,263	12,181,285	(3)	(3)	740,397	17,583,845
Indiana -----------	2,909,938	7,132,877	(3)	(3)	313,692	13,893,890
Kentucky ----------	4,728,954	2,198,234	1,598,579	---	3,858,708	12,384,475
Ohio --------------	10,465,897	2,223,458	3,109,439	---	4,496,412	20,295,206
Pennsylvania ------	22,763,862	(3)	1,548,192	---	(3)	35,771,314
West Virginia -----	9,643,292	---	1,525,704	(3)	(3)	18,950,541
Other States ------	4,245,367	4,413,397	4,700,661	6,327,989	26,318,323	20,626,649
Total --------	56,818,573	28,149,251	12,482,575	6,327,989	35,727,532	139,505,920
1949						
Illinois ---------	903,322	8,632,321	(3)	(3)	1,796,050	13,892,580
Indiana ----------	1,755,476	4,554,665	(3)	(3)	152,995	9,592,322
Kentucky ---------	1,973,040	3,628,262	650,360	---	4,108,250	10,359,912
Ohio -------------	9,152,215	1,778,044	3,082,565	---	4,309,841	18,322,665
Pennsylvania -----	15,030,995	---	1,176,841	---	6,022,792	22,230,628
West Virginia ----	7,012,108	---	655,754	108,651	5,970,044	13,746,557
Other States -----	4,091,934	4,531,057	4,620,597	5,256,781	5,090,339	17,900,635
Total -------	39,919,090	23,124,349	10,186,117	5,365,432	27,450,311	106,045,299
1950						
Illinois ---------	597,447	13,033,370	(3)	(3)	2,170,203	17,612,423
Indiana ----------	902,266	7,161,034	(3)	(3)	431,881	10,739,567
Kentucky ---------	2,180,924	5,099,337	(3)	(3)	4,880,136	13,977,643
Ohio -------------	10,679,335	2,112,859	5,036,000	---	4,946,999	22,775,193
Pennsylvania -----	15,969,284	(3)	1,209,785	---	(3)	26,426,597
West Virginia ----	8,248,670	---	260,530	---	4,476,954	12,986,154
Other States -----	5,324,670	5,389,008	5,462,214	4,364,333	13,529,325	18,948,987
Total -------	43,902,596	32,795,608	11,968,529	4,364,333	30,435,498	123,466,564
1951						
Illinois ---------	437,023	17,019,444	(3)	---	840,049	18,296,516
Indiana ----------	796,817	9,409,145	(3)	---	791,308	10,997,270
Kentucky ---------	1,741,770	5,662,390	(3)	(3)	4,323,018	11,727,178
Ohio -------------	11,153,914	1,824,431	2,498,510	---	6,132,806	21,609,661
Pennsylvania -----	15,035,186	(3)	887,286	---	7,433,871	23,356,343
West Virginia ----	7,471,557	---	989,834	---	4,566,498	13,027,889
Other States -----	4,975,821	3,884,983	3,638,918	2,424,994	3,678,103	18,602,819
Total -------	41,612,088	37,800,393	8,014,548	2,424,994	27,765,653	117,617,676

1/ Exclusive of lignite mines in 1948 and 1949.

2/ Also includes data reported but not sufficiently complete to be used.

3/ Included under "Other States."

TABLE 29.--Stripping operations in the bituminous-coal and lignite fields of the United States, by States and counties, in 1951 1/

State and county	Number of strip pits	Number of power shovels and draglines excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
Alabama:												
Blount	4	2	1	7	1	156,325	78	27	105	208	21,864	7.15
Cherokee	1	-	-	-	1	6,242	6	-	6	192	1,152	5.42
Cullman	1	1	-	2	-	38,916	27	11	38	198	7,531	5.17
Jefferson	4	-	-	8	2	263,368	96	47	143	220	31,529	8.35
St. Clair	1	-	-	-	-	1,856	2	-	2	192	384	4.83
Shelby	1	-	-	2	-	21,696	11	4	15	192	2,880	7.53
Tuscaloosa	13	-	-	35	2	545,656	186	40	226	214	48,304	11.30
Walker	14	-	2	33	1	859,963	304	86	390	159	62,167	13.83
Total Alabama	39	3	3	87	7	1,894,022	710	215	925	190	175,811	10.77
Alaska	4	-	-	6	-	232,359	58	39	97	140	13,586	17.10
Arkansas:												
Franklin	1	1	-	2	-	29,622	14	5	19	222	4,213	7.03
Johnson	4	-	1	6	-	325,498	86	18	104	221	22,936	14.19
Pope	1	-	-	-	-	2,324	4	-	4	150	600	3.87
Sebastian	7	-	-	2	2	50,575	91	21	112	92	10,268	4.93
Total Arkansas	13	1	1	10	2	408,019	195	44	239	159	38,017	10.73
California (lignite):												
Amador	1	-	-	1	-	3,657	3	-	3	125	375	9.75
Colorado:												
El Paso	1	-	-	1	-	7,582	5	-	5	194	970	7.82
Fremont	2	-	-	1	-	6,169	8	-	8	72	576	10.71
Jackson	2	-	-	-	-	3,354	8	-	8	155	1,236	2.71
Routt	2	-	1	3	-	319,917	35	42	77	201	15,479	20.67
Weld	1	-	1	1	-	29,030	12	7	19	82	1,558	18.63
Total Colorado	8	-	2	6	-	366,052	68	49	117	169	19,819	18.47

For footnote see end of table.

TABLE 29.--Stripping operations in the bituminous-coal and lignite fields of the United States, by States and counties, in 1951 1/ - Con.

State and county	Number of strip pits	Number of power shovels and dragline excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
Illinois:												
Bureau	1	-	5	-	-	804,932	44	92	136	285	38,760	20.77
Fulton	13	-	21	14	4	5,350,882	447	492	939	243	228,080	23.46
Gallatin	2	-	-	3	-	57,188	20	15	35	85	2,992	19.11
Grundy	2	-	3	-	3	411,107	88	36	124	258	32,013	12.84
Hancock	1	-	-	2	2	41,030	12	3	15	163	2,446	16.77
Jackson	3	-	6	5	-	665,800	113	89	202	221	44,551	14.94
Kankakee	1	-	3	1	-	757,515	159	56	215	262	56,338	13.45
Knox	3	-	9	-	-	2,033,134	155	276	431	247	106,526	19.09
La Salle	4	-	1	-	3	8,938	13	1	14	145	2,026	4.41
Livingston	1	-	-	-	2	2,695	5	-	5	125	625	4.31
Peoria	6	-	-	5	3	148,474	52	16	68	155	10,565	14.05
Perry	4	-	12	3	1	2,798,851	306	365	671	224	150,373	18.61
Randolph	1	-	4	2	-	1,081,812	55	79	134	287	38,474	28.12
St. Clair	3	-	6	8	-	1,559,793	142	113	255	269	68,709	22.70
Saline	1	-	2	3	-	317,294	95	145	240	166	39,768	7.98
Schuyler	3	-	-	-	2	9,646	13	1	14	116	1,628	5.93
Vermilion	7	-	3	5	4	922,499	89	41	130	280	36,398	25.34
Will	1	-	3	-	1	166,004	24	19	43	254	10,923	15.20
Williamson	6	-	4	12	2	1,158,922	134	63	197	281	55,357	20.94
Total Illinois	63	-	82	63	27	18,296,516	1,966	1,902	3,868	240	926,552	19.75
Indiana:												
Clay	11	1	11	19	11	1,304,993	371	99	470	246	115,389	11.31
Daviess	1	-	4	-	-	416,913	59	47	106	299	31,694	13.15
Fountain	1	-	2	1	-	66,821	25	5	30	252	7,560	8.84
Gibson	1	-	2	-	-	58,777	22	25	57	106	6,059	9.70
Greene	1	-	2	1	-	383,747	50	26	76	269	20,411	18.80
Knox	1	-	3	1	-	482,181	57	49	116	228	26,504	18.19
Owen	2	-	2	-	2	159,625	35	5	40	230	9,180	17.39
Pike	6	-	19	14	-	3,204,345	466	229	695	272	188,743	16.98
Spencer	1	-	-	1	1	45,350	14	6	20	190	3,800	11.93
Sullivan	4	-	9	5	-	1,227,912	178	139	317	287	91,038	13.49
Vermillion	1	-	3	-	-	210,789	24	15	39	346	13,494	15.62
Vigo	3	-	3	2	2	770,906	118	50	168	255	42,818	18.00
Warrick	5	-	10	6	1	2,664,911	307	267	574	246	141,109	18.89
Total Indiana	38	1	70	50	17	10,997,270	1,746	962	2,708	258	697,799	15.76
Iowa:												
Davis	2	-	-	4	2	69,165	14	6	20	273	5,468	12.65
Jasper	1	-	-	-	-	1,575	4	1	5	55	275	5.73
Mahaska	12	-	-	11	13	98,735	51	6	57	227	12,936	7.63
Marion	17	-	4	17	16	834,152	189	61	250	235	58,854	14.17
Van Buren	4	-	-	5	3	40,941	23	11	34	160	5,450	7.51
Wapello	5	-	-	7	2	106,618	35	15	50	237	11,856	8.99
Total Iowa	41	-	4	44	36	1,151,186	316	100	416	228	94,839	12.14

For footnote see end of table.

TABLE 29.—Stripping operations in the bituminous-coal and lignite fields of the United States, by States and counties, in 1951 1/ - Con.

State and county	Number of strip pits	Number of power shovels and dragline excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
Kansas:												
Bourbon	5	4	2	-	2	80,131	45	16	61	141	8,604	9.31
Cherokee	8	-	4	7	3	613,332	168	107	275	165	45,471	13.49
Coffey	1	-	-	-	-	3,406	9	-	9	120	1,080	3.15
Crawford	11	2	9	2	4	711,010	180	85	265	230	60,831	11.69
Labette	2	-	-	-	1	2,993	6	-	6	199	1,191	2.51
Linn	1	-	3	-	-	457,324	37	47	84	233	19,555	23.39
Osage	4	-	-	2	2	19,079	23	1	24	148	3,561	5.36
Total Kansas	32	6	18	11	12	1,887,275	468	256	724	194	140,293	13.45
Kentucky:												
Bell	7	-	1	10	1	218,165	87	11	98	162	15,861	13.75
Boyd	1	-	-	4	-	185,820	61	14	75	245	18,375	10.11
Breathitt	1	-	-	3	-	693,628	47	75	122	231	28,239	24.56
Butler	1	-	-	1	-	9,852	5	-	5	248	1,239	7.95
Christian	1	-	-	-	1	1,275	2	-	2	45	90	14.17
Clay	3	-	-	5	-	28,133	18	-	18	130	2,339	12.03
Daviess	3	-	-	8	-	304,681	39	17	56	260	14,548	20.94
Elliott	7	-	5	11	-	266,361	72	16	88	258	22,670	11.75
Grayson	1	-	-	-	1	4,000	5	-	5	65	325	12.31
Greenup	1	-	-	4	-	110,485	20	5	25	300	7,500	14.73
Hancock	1	-	-	2	-	48,308	15	10	25	136	3,406	14.18
Harlan	1	-	-	1	-	62,364	34	7	41	172	7,033	8.87
Hopkins	23	-	15	43	5	5,125,553	590	436	1,026	195	199,714	25.66
Jackson	5	-	-	6	1	65,430	45	5	50	154	7,710	8.49
Knox	5	-	-	2	3	56,972	36	3	39	143	5,565	10.24
Laurel	1	-	-	-	1	3,500	3	-	3	192	576	6.08
Lee	1	-	-	2	-	25,400	8	-	8	225	1,800	14.11
Letcher	2	-	-	6	1	126,100	46	10	56	207	11,592	10.88
Madison	1	-	-	-	-	1,400	4	-	4	58	232	6.03
Magoffin	1	-	-	3	-	128,961	44	6	50	193	9,630	13.39
McCreary	4	-	-	9	-	162,023	51	12	63	212	13,353	12.13
Morgan	3	-	-	5	-	70,380	30	9	39	181	7,050	9.98
Muhlenberg	7	-	5	14	2	1,402,737	270	175	445	168	74,851	18.74
Ohio	7	-	8	8	1	2,060,917	137	212	349	245	85,479	24.11
Pulaski	6	-	-	8	2	180,130	58	6	64	207	13,219	13.63
Rockcastle	4	-	-	7	-	89,529	37	4	41	202	8,290	10.80
Webster	2	-	-	4	-	139,245	27	13	40	172	6,860	20.30
Whitley	4	-	-	8	-	148,668	105	24	129	146	18,805	7.91
Wolfe	4	-	-	-	2	7,161	10	-	10	130	1,303	5.05
Total Kentucky	108	-	34	174	21	11,727,178	1,906	1,070	2,976	197	587,654	19.96

For footnote see end of table.

TABLE 29.—Stripping operations in the bituminous-coal and lignite fields of the United States, by States and counties, in 1951 1/ - Con.

State and county	Number of strip pits	Number of power shovels and dragline excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
Maryland:												
Allegany	13	-	-	6	2	69,953	65	4	69	128	8,817	7.93
Garrett	12	-	-	8	8	96,135	75	14	89	112	10,007	9.61
Total Maryland	25	-	-	14	10	166,088	140	18	158	119	18,824	8.82
Missouri:												
Barton	5	-	4	-	1	288,034	58	33	91	216	19,633	14.67
Bates	3	-	2	-	2	371,290	36	38	74	228	16,853	22.03
Boone	2	-	-	2	-	33,028	13	4	17	227	3,867	8.54
Callaway	2	-	-	3	1	141,957	36	13	49	277	13,571	10.46
Dade	1	-	-	-	1	7,150	7	-	7	200	1,400	5.11
Henry	10	-	8	4	2	678,056	136	69	205	191	39,215	17.29
Johnson	1	-	-	-	-	2,012	3	-	3	194	582	3.46
Macon	2	-	4	1	-	729,098	70	59	129	263	33,986	21.48
Ralls	1	-	-	1	-	2,102	7	3	10	93	930	2.26
Randolph	1	-	3	-	-	455,282	49	37	86	263	22,592	20.15
St. Clair	4	-	3	-	1	225,485	57	21	78	195	15,181	14.85
Vernon	4	2	-	1	2	79,275	34	9	43	171	7,365	10.76
Total Missouri	36	2	24	12	10	3,013,669	506	286	792	221	175,175	17.20

For footnote see end of table.

TABLE 29.—Stripping operations in the bituminous-coal and lignite fields of the United States, by States and counties, in 1951 1/ - Con.

State and county	Number of strip pits	Number of power shovels and dragline excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
Montana (bituminous coal):												
Rosebud	1	—	6	1	—	1,488,300	55	15	70	225	15,780	94.32
Montana (lignite):												
Sheridan	1	—	—	—	1	6,313	4	2	6	140	840	7.52
Total Montana	2	—	6	1	1	1,494,613	59	17	76	219	16,620	89.93
North Dakota (lignite):												
Adams	1	—	—	1	—	30,839	12	—	12	166	1,992	15.48
Bowman	1	—	—	2	—	124,511	6	5	11	276	3,032	41.07
Burke	3	—	3	—	2	431,062	27	41	68	265	18,016	23.93
Burleigh	1	—	—	1	—	22,582	6	—	6	240	1,440	15.68
Divide	1	—	2	—	1	318,744	18	22	40	271	10,848	29.38
Dunn	2	—	—	—	2	15,800	6	—	6	181	1,084	14.58
Grant	4	—	—	1	—	27,180	12	—	12	137	1,650	16.47
Hettinger	3	—	—	—	2	17,333	10	1	11	161	1,771	9.79
McKenzie	1	—	—	—	—	1,640	2	—	2	200	400	4.10
McLean	3	—	3	—	2	328,169	36	33	69	239	16,506	19.88
Mercer	5	—	5	4	—	948,362	67	68	135	233	31,429	30.18
Morton	5	—	—	3	1	30,773	16	—	16	151	2,414	12.75
Mountrail	1	—	—	1	—	5,604	2	—	2	120	240	23.35
Oliver	1	—	—	1	—	6,920	3	—	3	108	324	21.36
Stark	4	—	—	3	—	119,951	24	6	30	256	7,671	15.64
Ward	3	—	4	3	—	533,431	48	57	105	265	27,811	19.18
Williams	2	—	—	—	2	10,225	6	1	7	139	972	10.52
Total North Dakota	41	—	17	20	12	2,973,126	301	234	535	239	127,600	23.30

For footnote see end of table.

TABLE 29.—Stripping operations in the bituminous-coal and lignite fields of the United States, by States and counties, in 1951 1/ - Con.

State and county	Number of strip pits	Number of power shovels and dragline excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
Ohio:												
Athens	4	-	-	9	1	146,422	47	45	92	130	11,926	12.28
Belmont	17	-	1	30	9	1,082,337	197	86	283	175	49,457	21.88
Carroll	7	-	-	9	6	184,031	74	9	83	204	16,948	10.86
Columbiana	46	-	-	72	10	1,289,631	375	76	451	230	103,787	12.43
Coshocton	13	-	1	31	8	810,112	182	78	260	228	59,178	13.69
Gallia	4	-	-	10	-	266,926	94	32	126	141	17,825	14.97
Guernsey	8	-	-	18	2	468,595	121	36	157	201	31,550	14.85
Harrison	17	-	22	33	6	5,855,187	560	607	1,167	220	256,739	22.81
Hocking	8	-	-	4	6	77,660	47	7	54	129	6,978	11.13
Holmes	1	-	-	1	-	7,937	6	-	6	160	960	8.27
Jackson	13	-	3	10	4	246,428	112	28	140	191	26,701	9.23
Jefferson	27	-	3	61	4	2,782,214	447	232	679	233	158,193	17.59
Lawrence	5	-	-	8	1	167,895	51	12	63	237	14,951	11.23
Mahoning	17	-	1	28	6	761,567	196	36	232	239	55,501	13.72
Meigs	3	-	-	10	-	279,118	60	13	73	232	16,935	16.48
Morgan	3	-	-	7	1	143,028	42	6	48	221	10,584	13.51
Muskingum	16	-	3	25	7	1,138,504	180	75	255	180	45,886	24.81
Noble	7	-	3	21	-	1,462,788	177	93	270	215	57,939	25.25
Perry	17	-	4	31	3	1,666,732	358	189	547	183	100,214	16.63
Portage	2	-	-	3	1	182,910	29	15	44	320	14,080	12.99
Scioto	1	-	-	-	-	1,618	4	-	4	74	296	5.47
Stark	17	-	-	43	10	898,558	261	58	319	209	66,517	13.51
Tuscarawas	27	1	2	42	20	1,286,721	300	112	412	249	102,622	12.54
Vinton	9	-	-	14	5	191,230	112	11	123	206	25,342	7.55
Washington	1	-	-	2	-	106,563	21	8	29	191	5,536	19.25
Wayne	1	-	-	4	1	104,949	23	10	33	306	10,098	10.39
Total Ohio	291	1	43	526	111	21,609,661	4,076	1,874	5,950	213	1,266,743	17.06
Oklahoma:												
Coal	2	-	1	3	-	69,197	34	14	48	160	7,662	9.03
Craig	2	1	1	2	-	58,704	33	5	38	217	8,252	7.11
Haskell	5	1	-	8	-	196,822	98	11	109	181	19,680	10.00
LeFlore	4	-	1	4	1	207,077	91	30	121	158	19,163	10.81
McIntosh	2	2	-	1	-	101,837	29	10	39	172	6,707	15.18
Muskogee	1	-	-	-	-	1,195	4	-	4	100	400	2.99
Okmulgee	2	-	2	2	-	114,363	36	38	74	111	8,224	13.91
Rogers	2	2	3	2	-	334,654	96	37	133	257	34,192	9.79
Sequoyah	1	-	1	5	-	137,093	28	7	35	265	9,275	14.78
Wagoner	1	-	-	-	-	1,879	8	-	8	76	608	3.09
Total Oklahoma	22	6	9	27	1	1,222,821	457	152	609	187	114,163	10.71

For footnote see end of table.

TABLE 29.—Stripping operations in the bituminous coal and lignite fields of the United States, by States and counties, in 1951 1/ - Con.

State and county	Number of strip pits	Number of power shovels and dragline excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
Pennsylvania:												
Allegheny-------------	53	-	-	81	16	1,361,812	480	127	607	163	98,691	13.80
Armstrong-------------	50	-	-	85	13	1,774,401	576	165	741	169	125,136	14.18
Beaver----------------	14	-	1	23	2	368,565	122	40	162	223	36,170	10.19
Bedford---------------	3	-	-	5	-	75,185	52	6	58	114	6,597	11.40
Blair-----------------	3	-	-	8	-	158,214	43	10	53	262	13,896	11.39
Bradford--------------	1	-	-	1	1	7,240	5	2	7	171	1,200	6.03
Butler----------------	48	-	-	91	11	1,743,477	516	157	673	195	131,172	13.29
Cambria---------------	32	-	-	65	5	764,803	345	55	400	154	61,611	12.41
Cameron---------------	2	-	-	4	-	72,565	25	3	28	241	6,745	10.76
Centre----------------	22	-	-	59	13	904,461	327	54	381	213	81,108	11.15
Clarion---------------	40	-	-	97	13	2,481,050	663	241	904	223	202,037	12.28
Clearfield------------	88	2	-	209	26	3,601,174	1,356	345	1,701	183	311,227	11.57
Clinton---------------	9	-	-	23	3	670,122	165	38	203	254	51,641	12.98
Elk-------------------	18	-	-	24	4	436,057	186	40	226	154	34,795	12.53
Fayette---------------	48	1	-	38	16	498,114	329	48	377	104	39,373	12.65
Fulton and Huntingdon-	4	-	-	17	1	325,488	135	11	146	140	20,396	15.96
Greene----------------	7	1	-	11	1	65,822	39	8	47	126	5,908	11.14
Indiana---------------	42	-	1	67	11	1,132,964	450	93	543	160	87,003	13.02
Jefferson-------------	37	-	-	61	12	994,260	383	99	482	169	81,678	12.17
Lawrence--------------	15	-	1	25	3	503,021	140	20	160	204	32,647	15.41
Lycoming--------------	1	-	-	2	-	18,118	9	-	9	258	2,322	7.80
McKean----------------	3	-	-	4	3	80,657	24	2	26	247	6,428	12.55
Mercer----------------	8	-	1	11	1	333,789	84	24	108	189	20,415	16.35
Somerset--------------	45	-	1	100	14	1,887,364	605	145	750	187	139,958	13.49
Tioga-----------------	2	-	-	4	-	60,646	22	9	31	144	4,453	13.62
Venango---------------	11	-	-	21	5	445,940	97	22	119	257	30,540	14.60
Washington------------	35	1	6	67	8	1,978,432	568	168	736	193	141,718	13.96
Westmoreland----------	58	-	-	57	18	612,602	403	45	448	104	46,547	13.16
Total Pennsylvania-	699	5	11	1,260	200	23,356,343	8,149	1,977	10,126	180	1,821,412	12.82
South Dakota (lignite):												
Carson and Dewey------	2	-	-	1	2	28,350	13	1	14	222	3,109	9.12

For footnote see end of table.

TABLE 29.—Stripping operations in the bituminous-coal and lignite fields of the United States, by States and counties, in 1951 1/ - Con.

State and county	Number of strip pits	Number of power shovels and dragline excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
Tennessee:												
Anderson	2	-	-	-	2	6,751	9	-	9	97	873	7.73
Campbell	2	-	1	1	-	107,286	48	21	69	145	9,993	10.74
Claiborne	4	-	-	9	-	108,295	65	13	78	150	11,664	9.28
Grundy	4	-	3	4	-	74,953	26	14	40	160	6,399	11.71
Hamilton	3	-	-	1	2	24,594	15	2	17	112	1,908	12.89
Marion	1	-	-	5	4	30,983	21	4	25	150	3,750	8.26
Morgan	2	-	-	4	-	34,236	13	2	15	168	2,520	13.59
Overton	2	-	-	5	-	20,969	8	3	11	165	1,820	11.52
Scott	3	-	-	6	-	67,420	25	4	29	178	5,166	13.05
White	1	-	-	2	-	2,847	4	-	4	171	684	4.16
Total Tennessee	24	-	4	37	8	478,334	234	63	297	151	44,777	10.68
Virginia:												
Buchanan	11	-	6	19	-	503,693	148	47	195	168	32,667	15.42
Dickenson	1	-	3	3	-	319,846	71	10	81	231	18,751	17.06
Russell	2	-	-	4	1	21,134	16	6	22	51	1,120	18.87
Tazewell	1	-	-	1	1	12,676	6	-	6	194	1,164	10.89
Wise	16	-	7	14	-	516,133	138	40	178	199	35,397	14.58
Total Virginia	31	-	16	41	2	1,373,482	379	103	482	185	89,099	15.42
Washington:												
King	2	-	-	3	1	32,544	24	9	33	163	5,367	6.06
Kittitas	1	-	-	-	2	31,339	17	3	20	180	3,600	8.71
Thurston	1	-	-	1	1	10,068	12	2	14	66	924	10.90
Total Washington	4	-	-	4	4	73,951	53	14	67	148	9,891	7.48

For footnote see end of table.

TABLE 29.--Stripping operations in the bituminous-coal and lignite fields of the United States, by States and counties, in 1951 1/ - Con.

State and county	Number of strip pits	Number of power shovels and dragline excavators				Mined by stripping (net tons)	Average number of men working daily			Average number of days worked	Number of man-days worked	Average tons per man per day
		Steam	Electric	Diesel	Gasoline		In strip pits	All others	Total			
West Virginia:												
Barbour	16	-	2	37	2	1,822,877	371	232	603	180	108,749	16.76
Boone	5	-	-	9	1	193,214	94	14	108	176	19,041	10.15
Braxton and Webster	2	-	-	5	-	101,582	28	9	37	198	7,321	13.88
Brooke	9	-	-	19	-	714,743	203	59	262	212	55,455	12.89
Fayette	23	-	-	41	7	905,860	328	83	411	170	70,001	12.94
Grant	1	-	-	-	1	12,769	5	-	5	287	1,435	8.90
Greenbrier	12	-	-	21	5	411,118	198	45	243	152	36,980	11.12
Hancock	2	-	-	2	1	133,665	28	4	32	250	7,996	16.72
Harrison	49	-	-	93	11	2,773,919	783	302	1,085	149	161,273	17.20
Kanawha	9	-	-	12	2	448,461	152	31	183	162	29,573	15.16
Lewis	6	-	-	13	1	446,092	77	21	98	233	22,836	19.53
Marion	2	-	-	1	1	34,646	20	4	24	94	2,264	15.30
McDowell	14	-	-	50	-	1,051,801	294	55	349	212	74,043	14.21
Mercer	17	-	-	36	4	704,011	268	53	321	167	53,653	13.12
Mineral	3	-	-	6	-	60,600	35	5	40	110	4,392	13.80
Mingo	3	-	-	5	-	212,363	92	22	114	131	14,982	14.17
Monongalia	8	-	-	15	1	322,886	101	42	143	133	19,049	16.95
Nicholas	5	-	-	10	-	372,802	101	30	131	218	28,588	13.04
Ohio	1	-	-	-	-	4,004	8	-	8	72	576	6.95
Pocahontas	1	-	-	3	-	83,908	36	6	42	313	13,157	6.38
Preston	16	-	-	23	-	243,878	174	38	212	110	23,407	10.42
Putnam	1	-	-	3	-	50,000	16	-	16	180	2,880	17.36
Raleigh	12	-	-	21	3	307,075	134	21	155	151	23,430	13.11
Randolph	12	-	-	19	3	522,898	164	45	209	158	32,941	15.87
Taylor	7	-	-	15	-	232,190	119	34	153	115	17,532	13.24
Tucker	1	-	-	5	-	24,761	26	7	33	54	1,782	13.90
Upshur	7	-	-	16	3	489,570	98	34	132	154	20,333	24.08
Wyoming	5	-	-	12	-	346,196	101	29	130	183	23,777	14.56
Total West Virginia	249	-	2	492	46	13,027,889	4,054	1,225	5,279	166	877,446	14.85
Wyoming:												
Campbell	1	-	-	-	-	307,074	16	20	36	291	10,464	29.35
Carbon	4	1	-	8	2	505,964	81	43	124	197	24,437	20.70
Converse	1	-	-	-	-	2,778	2	-	2	262	524	5.30
Lincoln	1	-	-	4	-	549,557	85	45	130	184	23,920	22.97
Sheridan	3	-	-	2	2	340,369	37	19	56	294	16,464	20.67
Sweetwater	1	-	-	4	-	130,073	24	14	38	169	6,433	20.22
Total Wyoming	11	1	-	18	4	1,835,815	245	141	386	213	82,242	22.32
Total United States 1951	1,784	26	346	2,905	533	117,617,676	26,102	10,742	36,844	199	7,341,846	16.02

1/ On returns from mines combining stripping and underground methods in same operation, tonnage has been separated and figures on employment prorated so that this table includes only data pertaining to strip mining.

MECHANICAL LOADING

Bituminous coal and lignite mechanically loaded in underground mines amounted to 304,255,921 tons in 1951, or 73 percent of the total underground output.

Mechanical loading equipment used in underground bituminous-coal and lignite mines is divided into two types, "machines" and "conveyors." "Machines" are devices which virtually eliminate hand shoveling and they include mobile loaders, continuous mining machines, augers, scrapers, and conveyors equipped with duckbills or other self-loading heads. "Conveyors" are devices that greatly reduce the labor in hand shoveling and they include hand-loaded face conveyors and pit-car loaders.

Growth of mechanical loading at underground bituminous-coal and lignite mines from 1923 to 1951 is shown in table 30. Type of mechanical loading equipment in use 1946-1951 and percent change in 1951 from 1950 are given in table 31.

Sales of Mechanical Loading Equipment.—Shipments of mechanical loading equipment for underground use in coal mines in the United States, in terms of capacity, were approximately the same in 1951 as in 1950. Table 32 shows the reported sales of mechanical loading equipment to bituminous-coal and lignite operators, by type of equipment and the number of manufacturers reporting for 1944-51.[3]

Table 33 shows loading equipment, "mother" conveyors, and shuttle cars sold in 1950-51 for use in bituminous-coal and lignite mines, by States.

Extent of Mechanical Loading.— Mobile loaders continuous mining machines and augers handled 83 percent of the underground tonnage that was mechanically loaded in 1951. Table 34 shows the tons and percentage handled by each type of equipment in 1950 and 1951.

During 1951, in underground bituminous coal and lignite mines, there was a combined total of 4,410 mobile loaders, continuous mining machines and augers in use and the average annual output per machine was 57,293 tons; self-loading conveyors averaged 11,178; scrapers, 5,734; and hand-loaded face conveyors, 9,627 tons per unit per year.

Mechanical Loading by States.—West Virginia has been the leading producer of mechanically loaded coal since 1939. During 1951 West Virginia produced 115,716,327 tons of mechanically loaded coal or 38 percent of the total bituminous coal and lignite that was mechanically loaded in the United States. Pennsylvania was second in production of mechanically loaded coal followed by Kentucky, Illinois and Ohio. These five States produced 85 percent of the total output of underground, mechanically loaded bituminous coal in the United States in 1951.

Detailed data, by States, on the number of mines, mechanical loading units and production of coal mechanically loaded compared with the total production at mines using mechanical loading devices are given in table 36. Comparative changes in underground mechanical loading in 1950-51, by States, are shown in table 35.

Table 13 shows bituminous-coal and lignite tonnage mined by stripping, compared with underground hand-loaded and machine loaded tonnage, as well as productivity and percent mined at strip and underground mines, by States, for 1951.

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[3] Young, W.H., and Anderson, R.L., Sales of Mechanical Loading and Cleaning Equipment: Coal Age February, 1952, pp.79-81; Min. Cong. Jour., February 1952, pp.131-133; Mechanization, February 1952, pp. 105-107.

TABLE 30.—Growth of mechanical loading at underground bituminous-coal and lignite mines in the United States, 1923-51

(Production in thousands of net tons)

Year	Underground production mechanically loaded								Total underground production	Percent of underground production mechanically loaded	Number of mechanical loading units in actual use					
	Loaded by machines				Handled by conveyors			Total mechanically loaded								
	Mobile loading machines	Scrapers	Conveyors equipped with duck-bills or other self-loading heads	Total	Pit-car loaders	Hand-loaded conveyors	Total				Mobile loading machines	Scrapers	Conveyors equipped with duck-bills or other self-loading heads	Pit-car loaders	Hand-loaded conveyors	Total all types
1923	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2/ 1,880	552,625	2/ 0.3	(1)	(1)	(1)	(1)	(1)	(1)
1924	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2/ 3,496	470,080	2/ .7	(1)	(1)	(1)	(1)	(1)	(1)
1925	(1)	(1)	(1)	(1)	(1)	(1)	(1)	2/ 6,243	503,182	2/ 1.2	(1)	(1)	(1)	(1)	(1)	(1)
1926	7,786	1,554	682	10,022	523	(1)	(1)	2/ 10,545	556,444	2/ 1.9	295	133	27	(1)	(1)	(1)
1927	(1)	(1)	(1)	(1)	(1)	(1)	(1)	16,500	499,385	3.3	(1)	(1)	(1)	(1)	(1)	(1)
1928	11,811	1,548	1,200	14,559	4,117	2,883	7,000	21,559	480,956	4.5	397	130	82	1,040	(1)	(1)
1929	16,432	1,550	1,309	19,291	14,979	3,592	18,571	37,862	514,721	7.4	488	126	99	2,521	(1)	(1)
1930	20,073	1,637	1,628	23,338	19,116	4,528	23,644	46,982	447,684	10.5	545	150	140	2,876	(1)	(1)
1931	19,407	1,471	1,811	22,689	19,172	5,701	24,873	47,562	363,157	13.1	583	146	165	3,428	(1)	(1)
1932	14,825	1,132	1,630	17,587	12,590	5,640	18,230	35,817	290,069	12.3	548	128	159	3,112	(1)	(1)
1933	17,865	991	1,656	20,512	11,413	5,896	17,309	37,821	315,360	12.0	523	93	132	2,453	525	3,726
1934	20,750	1,004	2,082	23,836	11,089	6,508	17,597	41,433	338,578	12.2	534	119	157	2,288	574	3,672
1935	24,675	1,118	2,595	28,388	11,098	7,691	18,789	47,177	348,726	13.5	657	78	179	2,098	670	3,682
1936	40,970	1,273	3,240	45,483	10,538	10,956	21,494	66,977	410,962	16.3	980	106	234	1,851	936	4,107
1937	(1)	(1)	(1)	(1)	(1)	(1)	(1)	83,500	413,780	20.2	(1)	(1)	(1)	(1)	(1)	(1)
1938	57,824	1,031	4,248	63,103	5,653	16,337	21,990	85,093	318,138	26.7	1,405	117	346	1,392	1,526	4,786
1939	76,442	1,007	6,759	84,208	5,038	21,466	26,504	110,712	357,133	31.0	1,573	131	559	873	1,834	4,970
1940	100,962	1,255	10,362	112,579	3,979	31,312	35,291	147,870	417,604	35.4	1,720	116	656	697	2,263	5,452
1941	126,478	1,290	14,918	142,686	3,447	40,534	43,981	186,667	459,078	40.7	1,985	109	788	607	2,807	6,296
1942	160,301	1,405	20,683	182,389	3,252	47,262	50,514	232,903	515,490	45.2	2,301	93	1,062	481	3,041	6,978
1943	179,008	1,349	22,917	203,274	2,669	43,862	46,531	249,805	510,492	48.9	2,525	83	1,226	321	3,191	7,346
1944	202,875	1,341	23,164	227,380	1,835	44,974	46,809	274,189	518,678	52.9	2,737	87	1,331	241	3,236	7,632
1945	198,668	1,252	21,506	221,426	986	40,100	41,086	262,512	467,630	56.1	2,950	87	1,383	142	3,385	7,947
1946	186,975	917	19,678	207,570	623	37,148	37,771	245,341	420,958	58.3	3,200	75	1,521	93	3,470	8,359
1947	229,836	854	21,921	252,611	353	45,193	45,546	298,157	491,229	60.7	3,569	67	1,531	71	3,979	9,217
1948	3/ 232,667	743	19,634	253,044	184	42,578	42,762	295,806	460,012	64.3	3/ 3,980	56	1,632	37	4,125	9,830
1949	3/ 177,239	339	13,994	191.572	54	30,750	30,804	222,376	331,823	67.0	3/ 4,205	46	1,483	17	4,312	10,063
1950	3/ 222,976	318	13,985	237,279	39	35,407	35,446	272,725	392,844	69.4	3/ 4,318	39	1,329	12	4,434	10,132
1951	4/ 252,663	126	13,884	266,673	(5)	37,583	37,583	304,256	416,047	73.1	4/ 4,410	22	1,242	(5)	3,904	9,578

1/ Data not available.
2/ Exclusive of tonnage "Handled by conveyors."
3/ Includes continuous mining machines.
4/ Includes continuous mining machines and augers.
5/ Canvass of pit-car loaders discontinued in 1951.

TABLE 31.--Units of mechanical loading equipment in use in underground bituminous-coal and lignite mines in the United States, 1946-51

Type of equipment	1946	1947	1948	1949	1950	1951	Change from 1950 (percent)
Mobile loaders	3,200	3,569	1/3,980	1/4,205	1/4,318	2/4,410	+ 2.1
Scrapers	75	67	56	46	39	22	- 43.6
Pit-car loaders	93	71	37	17	12	(3)	---
Conveyors equipped with duckbills or other self-loading heads	1,521	1,531	1,632	1,483	1,329	1,242	- 6.5
Hand-loaded conveyors	3,470	3,979	4,125	4,312	4,434	3,904	- 12.0
Total	8,359	9,217	9,830	10,063	10,132	9,578	- 5.5

1/ Includes continuous mining machines.
2/ Includes continuous mining machines and augers.
3/ Canvass of pit-car loaders discontinued in 1951.

TABLE 32.--Units of mechanical loading equipment sold to bituminous-coal and lignite mines for underground use in the United States, as reported by manufacturers, 1944-51

Type of equipment	1944	1945	1946	1947	1948	1949	1950	1951	Change from 1950 (percent)
Mobile loaders	282	349	490	485	1/723	1/286	1/289	1/287	- 0.7
Scrapers	20	6	3	12	17	8	1	4	+ 300.0
Conveyors 2/	580	738	838	846	1,025	394	316	297	- 6.0
Pit-car loaders	---	(3)	(3)	(3)	(3)	(3)	(3)	(3)	---
Total	882	1,093	1,331	1,343	1,765	688	606	588	- 3.0
Number of manufacturers reporting	22	25	24	23	22	22	20	21	---

1/ Includes continuous mining machines.
2/ Includes hand-loaded conveyors and those equipped with duckbills or other self-loading heads.
3/ Canvass of sales of pit-car loaders discontinued in 1945.

TABLE 33.--Units of mechanical loading equipment, "mother" conveyors, and shuttle cars sold for use in underground bituminous-coal and lignite mines in the United States, as reported by manufacturers, 1950-51, by States

State	Mechanical loading equipment								"Mother" conveyors 4/		Shuttle cars	
	Mobile loaders 1/		Scrapers		Room conveyors 2/		Face conveyors 3/					
	1950	1951	1950	1951	1950	1951	1950	1951	1950	1951	1950	1951
Alabama ---------	13	5	---	---	---	1	---	---	---	---	7	26
Arkansas --------	1	---	---	---	2	---	---	---	1	---	---	---
Colorado -------	2	7	1	2	1	17	---	2	---	6	5	6
Illinois --------	20	27	---	---	15	3	2	---	16	19	75	70
Indiana ---------	5	1	---	---	---	---	---	---	---	---	15	4
Kentucky --------	55	38	---	---	51	47	20	24	24	18	94	46
Maryland --------	---	---	---	---	1	---	---	---	---	---	---	---
New Mexico ------	---	1	---	---	---	---	---	---	---	---	---	---
Ohio ------------	12	13	---	---	12	---	8	---	8	2	24	20
Oklahoma --------	---	1	---	---	---	2	---	---	4	3	7	---
Pennsylvania ----	76	58	---	---	73	73	18	19	29	24	111	131
Tennessee -------	2	3	---	---	4	3	2	---	---	1	---	6
Utah ------------	10	6	---	---	---	2	---	---	2	2	20	8
Virginia --------	---	5	---	---	4	3	2	6	4	3	2	8
Washington ------	1	2	---	---	---	---	---	---	---	---	---	---
West Virginia ---	89	119	---	---	153	146	64	60	41	36	99	197
Wyoming ---------	3	1	---	---	---	---	---	---	3	---	6	2
Total ------	289	287	1	2	316	297	116	111	132	114	465	524

1/ Includes continuous mining machines.
2/ Includes hand-loaded conveyors and those equipped with duckbills or other self-loading heads.
3/ Includes bridge conveyors.
4/ Includes all haulage conveyors with capacity over 500 feet, except main slope conveyors.

TABLE 34.--Bituminous coal and lignite mechanically loaded underground in the United States, by type of loading equipment, 1950-51

Type of equipment	1950		1951	
	Net tons	Percent of total	Net tons	Percent of total
Mobile loaders, continuous mining machines and augers:				
Loading direct into mine cars 1/ -------	103,005,244	37.8	102,591,251	33.7
Loading onto conveyors 2/ --------------	10,561,900	3.9	11,229,016	3.7
Loading into shuttle cars 3/ -----------	109,408,384	40.1	138,842,852	45.6
Scrapers -------------------------------	318,133	0.1	126,148	-
Pit-car loaders ------------------------	39,265	-	(4)	(4)
Conveyors equipped with duckbills or other self-loading heads ---------------------	13,985,399	5.1	13,883,389	4.6
Hand-loaded conveyors ------------------	35,406,287	13.0	37,583,265	12.4
Total mechanically loaded -----------	272,724,612	100.0	304,255,921	100.0

1/Includes mobile loaders only.
2/Includes mobile loaders only in 1950 and mobile loaders and augers in 1951.
3/Includes mobile loaders and continuous mining machines.
4/Canvass of pit-car loaders discontinued in 1951.

TABLE 35.—Comparative changes in underground mechanical loading of bituminous coal and lignite by principal types of loading devices in the United States, 1950-51, by States

State	Net tons						Handled by each class (percent)				Underground output mechanically loaded (percent)	
	1950			1951			1950		1951			
	Loaded by machines 1/	Handled by conveyors 2/	Total	Loaded by machines 1/	Handled by conveyors	Total	Loaded by machines 1/	Handled by conveyors 2/	Loaded by machines 1/	Handled by conveyors	1950	1951
Alabama	7,262,987	2,215,697	9,478,684	8,227,286	1,798,408	10,025,694	76.6	23.4	82.1	17.9	75.6	85.7
Alaska	15,717	—	15,717	8,450	—	8,450	100.0	—	100.0	—	5.6	3.2
Arkansas	13,923	545,396	559,319	13,000	579,376	592,376	2.5	97.5	2.2	97.8	84.2	84.8
Colorado	2,289,192	261,963	2,551,155	2,198,350	348,948	2,547,298	89.7	10.3	86.3	13.7	66.2	68.2
Illinois	35,686,781	57,255	35,744,036	34,041,599	9,635	34,051,234	99.8	0.2	100.0	—	92.4	94.8
Indiana	8,788,405	44,228	8,832,633	7,988,762	45,856	8,034,618	99.5	.5	99.4	0.6	95.8	95.0
Iowa	36,088	5,254	41,342	43,341	—	43,341	87.3	12.7	100.0	—	5.9	9.0
Kentucky	26,783,853	4,612,722	31,396,575	30,854,223	4,961,628	35,815,851	85.3	14.7	86.1	13.9	48.7	56.6
Maryland	50,206	86,123	136,329	53,815	23,497	77,312	36.8	63.2	69.6	30.4	28.0	18.3
Montana:												
Bituminous	718,585	—	718,585	785,384	—	785,384	100.0	—	100.0	—	94.6	95.5
Lignite	11,183	—	11,183	8,150	—	8,150	100.0	—	100.0	—	25.9	28.3
Total Montana	729,768	—	729,768	793,534	—	793,534	100.0	—	100.0	—	90.9	93.3
New Mexico	573,957	—	573,957	620,246	—	620,246	100.0	—	100.0	—	79.0	79.2
North Dakota (lignite)	406,432	—	406,432	224,651	—	224,651	100.0	—	100.0	—	93.9	89.5
Ohio	11,723,658	170,981	11,894,639	13,769,185	148,370	13,917,555	98.6	1.4	98.9	1.1	79.4	85.2
Oklahoma	45,100	776,860	821,960	49,200	776,717	825,917	5.5	94.5	6.0	94.0	86.4	82.6
Pennsylvania	44,679,010	6,250,786	50,929,796	51,247,197	7,012,523	58,259,720	87.7	12.3	88.0	12.0	64.1	68.7
Tennessee	1,193,848	713,337	1,907,185	1,278,613	691,728	1,970,341	62.6	37.4	64.9	35.1	42.5	40.0
Utah	6,454,340	73,571	6,527,911	5,941,516	62,277	6,003,793	98.9	1.1	99.0	1.0	97.9	97.8
Virginia	6,369,294	1,151,410	7,520,704	8,181,989	1,417,508	9,599,497	84.7	15.3	85.2	14.8	46.7	47.9
Washington	101,690	448,440	550,130	124,598	459,262	583,860	18.5	81.5	21.3	78.7	68.5	74.6
West Virginia	79,384,046	17,893,664	97,277,710	96,567,751	19,148,576	115,716,327	81.6	18.4	83.5	16.5	74.2	77.0
Wyoming	4,690,765	137,865	4,828,630	4,445,350	98,956	4,544,306	97.1	2.9	97.8	2.2	98.8	98.9
Total	237,279,060	35,445,552	272,724,612	266,672,656	37,583,265	304,255,921	87.0	13.0	87.6	12.4	69.4	73.1

1/ Includes mobile loaders, continuous mining machines, scrapers, conveyors equipped with duckbills and other self-loading heads, and augers.
2/ Includes hand-loaded conveyors and pit-car loaders.

TABLE 36.—Mechanical loading underground in bituminous-coal and lignite mines in the United States, 1951, by States

State	Number of mines				Number of loading devices				Production mechanically loaded (net tons)			Total underground production at mines using mechanical loading devices (net tons)			
	Using loading machines only 1/	Using conveyors only	Using both loading machines and conveyors	Total	Mobile loading machines 2/	Scrapers	Conveyors equipped with duckbills or other self-loading heads	Hand-loaded conveyors (number of units)	Loaded by machines 1/	Handled by conveyors	Total	Mines using loading machines only 1/	Mines using conveyors only	Mines using both loading machines and conveyors	Total
Alabama	21	12	7	40	144	1	13	222	8,227,286	1,798,408	10,025,694	7,955,243	1,106,430	1,514,924	10,576,597
Alaska	1	-	-	1	-	-	2	-	8,450	-	8,450	84,517	-	-	84,517
Arkansas	-	17	1	18	-	-	2	83	13,000	579,376	592,376	-	578,074	14,302	592,376
Colorado	43	27	3	73	40	1	184	95	2,198,350	348,948	2,547,298	2,711,475	329,927	58,018	3,099,420
Illinois	87	1	-	88	475	-	16	4	34,041,599	9,635	34,051,234	34,160,259	9,635	-	34,169,894
Indiana	23	2	-	25	158	-	-	4	7,988,762	45,856	8,034,618	7,988,762	45,856	-	8,034,618
Iowa	3	-	-	3	2	-	4	-	43,341	-	43,341	43,341	-	-	43,341
Kentucky	129	37	24	190	500	-	146	459	30,854,223	4,961,628	35,815,851	31,522,950	4,027,796	7,508,150	43,058,896
Maryland	6	2	-	8	4	-	3	15	53,815	23,497	77,312	58,737	23,497	-	82,234
Montana:															
Bituminous	9	-	-	9	28	-	14	-	785,384	-	785,384	785,584	-	-	785,584
Lignite	1	-	-	1	2	-	-	-	8,150	-	8,150	8,150	-	-	8,150
Total Montana	10	-	-	10	30	-	14	-	793,534	-	793,534	793,734	-	-	793,734
New Mexico	3	-	-	3	16	-	1	-	620,246	-	620,246	620,246	-	-	620,246
North Dakota (lignite)	1	-	-	1	3	-	-	-	224,651	-	224,651	224,651	-	-	224,651
Ohio	50	13	2	65	229	-	60	35	13,769,185	148,370	13,917,555	13,820,334	310,985	54,014	14,185,333
Oklahoma	6	-	1	7	5	-	-	131	49,200	776,717	825,917	-	716,898	109,019	825,917
Pennsylvania	139	100	33	272	1,015	12	61	834	51,247,197	7,012,523	58,259,720	54,869,434	6,282,581	8,080,343	69,232,358
Tennessee	16	8	5	29	36	-	38	72	1,278,613	691,728	1,970,341	1,536,663	679,827	676,922	2,893,412
Utah	35	6	-	41	127	-	70	15	5,941,516	62,277	6,003,793	5,962,987	62,277	-	6,025,264
Virginia	33	13	9	55	131	1	52	156	8,181,989	1,417,508	9,599,497	9,634,933	1,521,161	3,344,910	14,501,004
Washington	4	2	3	9	1	6	9	84	124,598	459,262	583,860	78,774	28,615	496,242	603,631
West Virginia	257	109	89	455	1,462	-	362	1,668	96,567,751	19,148,576	115,716,327	93,200,079	14,003,690	23,194,895	130,398,664
Wyoming	14	1	1	16	32	1	205	27	4,445,350	98,956	4,544,306	4,425,350	3,934	115,022	4,544,306
Total	881	350	178	1,409	4,410	22	1,242	3,904	266,672,656	37,583,265	304,255,921	269,692,469	29,731,183	45,166,761	344,590,413

1/ Includes mobile loaders, continuous mining machines, scrapers, conveyors equipped with duckbills or other self-loading heads, and augers.
2/ Includes continuous mining machines and augers.

MECHANICAL CLEANING

Bituminous coal mechanically cleaned in 1951 totaled 240,009,808 tons, or 45 percent of the entire output.

Mechanical cleaning by wet methods includes jigs, concentrating tables, classifiers, launders, dense-medium processes, flotation and any combinations of these six methods.

Pneumatic methods of coal cleaning include air tables, air flow, air sand, and any combination of these three methods.

The growth of mechanical cleaning, 1927-51, is shown in table 37 and the method of mining at mines served by cleaning plants, 1933-51, is shown in table 38.

Tables 39, 40, 43, and 44 include mechanical-cleaning data on all coal mined in the United States except Pennsylvania anthracite. Tables 41 and 42 are on the same basis but do not include consumer-operated plants. The percentage of total production mechanically cleaned in 1906-51 is shown in table 12.

Consumer-operated plants include those owned by steel companies that receive coal (usually from affiliated companies), clean it, and then consume it directly at the plant.

Types of Cleaning Equipment.—The tonnage of bituminous coal cleaned by wet-washing methods was 221,430,400 tons in 1951—an increase of 21 percent over 1950. The quantity cleaned by pneumatic methods was 18,579,408 tons—a 20-percent increase.

Table 40 compares the number of cleaning plants and the tons of cleaned coal, by types of equipment, for 1950 and 1951. During 1951, 608 wet-washing and 94 pneumatic cleaning plants were in operation. Seventy-one tipples used both wet and dry methods at the same plant; deducting these duplications gives a net total of 631 plants that cleaned coal in 1951, an increase of 19 plants over 1950.

Mines served by cleaning plants (exclusive of those that ship to washeries operated by steel companies) produced 302,265,102 tons, or 57 percent of the total bituminous output in 1951. In this same group of mines, 232,386,278 tons were cleaned mechanically; therefore, 77 percent of the coal produced at mines with cleaning plants in 1951 was cleaned at the mine. The remainder of the output from these mines (23 percent) presumably represents the larger sizes commonly picked by hand. (See tables 42 and 44.)

Relation Between Raw Coal, Clean Coal, and Refuse.—For every 100 tons of raw coal cleaned during 1951 at the mines, 83 tons of clean merchantable coal, on an average, were obtained, and 17 tons of refuse were discarded. Table 44 shows total production of mines with cleaning plants and results of cleaning operations, by States.

Methods of Mining at Mines Served by Cleaning Plants.—Underground mechanical loading appears to be closely related to mechanical cleaning. Underground coal loaded mechanically in 1951 totaled 304,255,921 tons, of which 217,257,351 tons (71 percent) passed through tipples equipped with mechanical cleaning devices. Production of coal from strip mines in 1951 was 117,617,676 tons, of which 50,674,981 tons (43 percent) came from strip mines having mechanical cleaning tipples. Hand-loaded underground coal production in 1951 totaled 111,791,135 tons, of which 31 percent passed through tipples equipped with cleaning plants. (See tables 13 and 42.)

TABLE 37.--Growth of mechanical cleaning of bituminous coal in the United States, by types of equipment, 1927-51

(Includes coal cleaned at plants operated by consumers at central washeries in Colorado and Pennsylvania)

Year	Wet methods								Pneumatic methods	Total
	Jigs	Concentrating tables	Classifiers	Launders	Dense media	Jigs and tables	Other combinations 1/	Total		
					Thousands of net tons of clean coal					
1927 ----	18,741	3,200	(2)	2/ 1,000	(2)	300	800	24,041	3,651	27,692
1928 ----	17,927	3,412	(2)	2/ 2,446	(2)	1,056	156	24,997	3,786	28,783
1929 ----	18,915	3,532	(2)	2/ 7,103	(2)	1,214	191	30,955	5,844	36,799
1930 ----	17,724	2,272	(2)	2/ 9,818	(2)	1,029	62	30,905	7,895	38,800
1931 ----	13,957	1,551	(2)	2/ 11,213	(2)	926	11	27,658	8,514	36,172
1932 ----	9,963	821	(2)	2/ 12,140	(2)	806	9	23,739	6,539	30,278
1933 ----	11,895	1,119	(2)	2/ 13,272	(2)	693	5	26,984	7,574	34,558
1934 ----	14,012	1,116	(2)	2/ 15,168	(2)	1,227	6	31,529	8,298	39,827
1935 ----	15,735	1,118	(2)	2/ 18,454	(2)	1,549	---	36,856	8,505	45,361
1936 ----	23,417	1,843	(2)	2/ 22,631	(2)	2,613	---	50,504	10,591	61,095
1937 ----	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	65,000
1938 ----	27,615	984	4,521	10,681	4,450	2,791	2,145	53,187	10,268	63,455
1939 ----	37,056	1,402	5,917	12,809	4,683	3,256	2,611	67,734	11,695	79,429
1940 ----	47,064	2,330	7,762	16,269	6,692	2,765	4,408	87,290	14,980	102,270
1941 ----	53,287	2,510	8,177	16,954	9,344	4,364	5,742	100,378	17,162	117,540
1942 ----	66,876	3,138	10,529	18,658	12,495	4,366	5,938	122,000	20,187	142,187
1943 ----	66,092	2,929	11,854	17,424	13,388	4,322	8,366	124,375	21,201	145,576
1944 ----	74,175	2,753	14,780	19,686	13,869	4,649	8,751	138,663	20,064	158,727
1945 ----	68,609	2,594	14,203	18,980	12,875	4,754	8,455	130,470	17,416	147,886
1946 ----	64,702	1,447	13,883	16,021	14,173	3,776	8,057	122,059	16,611	138,670
1947 ----	85,931	2,980	14,648	17,902	17,702	4,303	12,617	156,083	18,353	174,436
1948 ----	87,506	4,360	18,304	16,788	20,638	5,252	11,816	164,664	16,216	180,880
1949 ----	72,423	4,040	14,865	11,238	17,821	3,288	17,033	140,708	12,944	153,652
1950 ----	94,161	4,693	18,059	11,630	28,948	6,153	19,526	183,170	15,528	198,698
1951 ----	101,746	5,811	23,174	10,362	33,840	7,613	38,884	221,430	18,580	240,010
					Percent cleaned by each type					
1927 ----	67.6	11.6	(2)	2/ 3.6	(2)	1.1	2.9	86.8	13.2	100.0
1928 ----	62.3	11.8	(2)	2/ 8.5	(2)	3.7	.5	86.8	13.2	100.0
1929 ----	51.4	9.6	(2)	2/ 19.3	(2)	3.3	.5	84.1	15.9	100.0
1930 ----	45.6	5.9	(2)	2/ 25.3	(2)	2.7	.2	79.7	20.3	100.0
1931 ----	38.6	4.3	(2)	2/ 31.0	(2)	2.6	(4)	76.5	23.5	100.0
1932 ----	32.8	2.7	(2)	2/ 40.2	(2)	2.7	(4)	78.4	21.6	100.0
1933 ----	34.4	3.2	(2)	2/ 38.5	(2)	2.0	(4)	78.1	21.9	100.0
1934 ----	35.2	2.8	(2)	2/ 38.1	(2)	3.1	(4)	79.2	20.8	100.0
1935 ----	34.7	2.5	(2)	2/ 40.7	(2)	3.4	---	81.3	18.7	100.0
1936 ----	38.3	3.0	(2)	2/ 37.1	(2)	4.3	---	82.7	17.3	100.0
1937 ----	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	---
1938 ----	43.5	1.6	7.1	16.8	7.0	4.4	3.4	83.8	16.2	100.0
1939 ----	46.6	1.8	7.5	16.1	5.9	4.1	3.3	85.3	14.7	100.0
1940 ----	46.0	2.3	7.6	15.9	6.5	2.7	4.3	85.3	14.7	100.0
1941 ----	45.3	2.2	7.0	14.4	7.9	3.7	4.9	85.4	14.6	100.0
1942 ----	47.0	2.2	7.4	13.1	8.8	3.1	4.2	85.8	14.2	100.0
1943 ----	45.4	2.0	8.1	12.0	9.2	3.0	5.7	85.4	14.6	100.0
1944 ----	46.7	1.8	9.3	12.4	8.8	2.9	5.5	87.4	12.6	100.0
1945 ----	46.4	1.8	9.6	12.8	8.7	3.2	5.7	88.2	11.8	100.0
1946 ----	46.7	1.0	10.0	11.6	10.2	2.7	5.8	88.0	12.0	100.0
1947 ----	49.3	1.7	8.4	10.3	10.1	2.5	7.2	89.5	10.5	100.0
1948 ----	48.4	2.4	10.1	9.3	11.4	2.9	6.5	91.0	9.0	100.0
1949 ----	47.1	2.6	9.7	7.3	11.6	2.2	11.1	91.6	8.4	100.0
1950 ----	47.4	2.4	9.1	5.8	14.6	3.1	9.8	92.2	7.8	100.0
1951 ----	42.4	2.4	9.7	4.3	14.1	3.2	16.2	92.3	7.7	100.0

1/ Includes all other wet methods.
2/ Launders include classifiers and dense media for the years 1927-36, inclusive.
3/ Data not available.
4/ Less than 0.05 percent.

TABLE 38.--Method of mining at bituminous-coal mines in the United States served by cleaning plants, 1933-51 1/

Year	Strip mines			Underground mines						Total all mines		
	Total production thousand tons	Production from mines with cleaning plants		Mechanical loading			Hand-loading			Grand total production thousand tons	Production from mines with cleaning plants	
		Thousand tons	Percent of total	Production mechanically loaded, thousand tons	Production from mines with cleaning plants: Thousand tons	Percent of total	Production hand-loaded, thousand tons	Production from mines with cleaning plants: Thousand tons	Percent of total		Thousand tons	Percent of total
1933 --	18,270	3,940	21.6	37,821	9,253	24.5	277,539	51,603	18.6	333,630	64,796	19.4
1934 --	20,790	7,128	34.3	41,433	10,129	24.4	297,145	59,052	19.9	359,368	76,309	21.2
1935 --	23,647	9,314	39.4	47,177	15,066	31.9	301,549	62,786	20.8	372,373	87,166	23.4
1936 --	28,126	10,953	38.9	66,977	23,462	35.0	343,985	80,987	23.5	439,088	115,402	26.3
1937 --	31,751	(2)	(2)	83,500	(2)	(2)	330,280	(2)	(2)	445,531	(2)	(2)
1938 --	30,407	15,214	50.0	85,093	37,195	43.7	233,045	55,829	24.0	348,545	108,238	31.1
1939 --	37,722	17,960	47.6	110,712	53,496	48.3	246,421	61,858	25.1	394,855	133,314	33.8
1940 --	43,167	20,030	46.4	147,870	66,148	44.7	269,734	75,558	28.0	460,771	161,736	35.1
1941 --	55,071	24,773	45.0	186,667	93,374	50.0	272,411	67,321	24.7	514,149	185,468	36.1
1942 --	67,203	28,597	42.6	232,903	118,917	51.1	282,587	70,560	25.0	582,693	218,074	37.4
1943 --	79,685	30,326	38.1	249,805	125,314	50.2	260,687	67,258	25.8	590,177	222,898	37.8
1944 --	100,898	32,444	32.2	274,189	137,927	50.3	244,489	62,565	25.6	619,576	232,936	37.6
1945 --	109,987	35,910	32.6	262,512	129,733	49.4	205,118	48,615	23.7	577,617	214,258	37.1
1946 --	112,964	33,222	29.4	245,341	125,521	51.2	175,617	41,531	23.6	533,922	200,274	37.5
1947 --	139,395	42,017	30.1	298,157	158,507	53.2	193,072	43,988	22.8	630,624	244,512	38.8
1948 --	139,506	44,305	31.8	295,806	171,346	57.9	164,206	36,061	22.0	599,518	251,712	42.0
1949 --	106,045	38,972	36.8	222,376	142,797	64.2	109,447	24,553	22.4	437,868	206,322	47.1
1950 —	123,466	47,701	38.6	272,725	188,732	69.2	120,120	30,256	25.2	516,311	266,689	51.7
1951 —	117,618	50,675	43.1	304,256	217,257	71.4	111,791	34,333	30.7	533,665	302,265,	56.6

1/ Does not include any estimate for mines that may ship to consumer-operated plants.
2/ Data not available.

TABLE 39.--Bituminous coal mechanically cleaned by wet and pneumatic methods, in the United States, 1948-51, in net tons of clean coal

Method of cleaning	1948	1949	1950	1951	
				Quantity	Change from 1950 (percent)
Wet methods:					
At mines	154,262,590	132,658,984	174,776,675	213,806,870	+ 22.3
At consumer-operated plants	10,401,932	8,049,004	8,393,528	7,623,530	- 9.2
Total wet methods	164,664,522	140,707,988	183,170,203	221,430,400	+ 20.9
Pneumatic methods	16,215,801	12,943,915	15,528,315	18,579,408	+ 19.6
Grand total	180,880,323	153,651,903	198,698,518	240,009,808	+ 20.8

TABLE 40.--Bituminous coal cleaned in the United States, by type of equipment in actual operation, 1950-51

(Includes consumer-operated plants)

Type of equipment	Plants in operation		Net tons of clean coal		Cleaned by each type (percent of total)	
	1950	1951	1950	1951	1950	1951
Wet methods:						
Jigs	296	308	94,161,108	101,746,501	47.4	42.4
Concentrating tables	18	19	4,693,434	5,810,626	2.4	2.4
Classifiers	83	84	18,058,760	23,174,005	9.1	9.7
Launders	13	13	11,630,018	10,362,595	5.8	4.3
Dense-media	124	120	28,947,797	33,840,174	14.6	14.1
Jigs and concentrating tables	19	21	6,152,924	7,612,636	3.1	3.2
Other combinations and methods	36	43	19,526,162	38,883,863	9.8	16.2
Total wet methods	589	608	183,170,203	221,430,400	92.2	92.3
Pneumatic methods	90	94	15,528,315	18,579,408	7.8	7.7
Grand total	1/679	1/ 702	198,698,518	240,009,808	100.0	100.0

1/Number of plants using both wet and pneumatic method was 67 in 1950 and 71 in 1951.

TABLE 41.--Total production from bituminous-coal mines served by cleaning plants in the United States, by type of equipment, 1950-51, in net tons

(Excludes consumer-operated plants)

Type of equipment	1950	1951	Change from 1950 (percent)
Wet methods:			
Jigs	128,228,369	134,597,871	+ 5.0
Concentrating tables	3,185,851	3,826,081	+ 20.1
Classifiers	35,007,774	39,166,788	+ 11.9
Launders	9,465,165	8,063,056	- 14.8
Dense-media	52,496,861	55,483,670	+ 5.7
Jigs and concentrating tables	10,200,875	9,463,836	- 7.2
Other combinations and methods	23,344,457	46,039,830	+ 97.2
Total wet methods	261,929,352	296,641,132	+ 13.3
Pneumatic methods	47,691,984	46,159,758	- 3.2
Grand total	309,621,336	342,800,890	+ 10.7
Less duplications 1/	42,932,206	40,535,788	- 5.6
Net total	266,689,130	302,265,102	+ 13.3
United States total production 2/	516,311,053	533,664,732	+ 3.4
Percent produced at mines having cleaning plants	51.7	56.6	—

1/ Mines using both wet and pneumatic methods.
2/ Includes all coal except Pennsylvania anthracite. There are no mechanical cleaning plants at lignite mines.

TABLE 42.--Total production from bituminous-coal mines served by cleaning plants in the United States, 1948-1951, by method of mining

(Excludes consumer-operated plants)

Method of mining	1948		1949		1950		1951	
	Thousand tons	Per-cent	Thousand tons	Per-cent	Thousand tons	Per-cent	Thousand tons	Per-cent
Mined from strip pits ----------	44,305	17.6	38,972	18.9	47,701	17.9	50,675	16.8
Mechanically loaded underground	171,346	68.1	142,797	69.2	188,732	70.8	217,257	71.9
Hand-loaded underground --------	36,061	14.3	24,553	11.9	30,256	11.3	34,333	11.3
Total ---------------------	251,712	100.0	206,322	100.0	266,689	100.0	302,265	100.0

TABLE 43.--Bituminous coal mechanically cleaned by wet and pneumatic methods in the United States, 1950-51, by States

(Includes consumer-operated plants)

State	Plants in operation		Net tons of clean coal		Output mechanically cleaned (percent)	
	1950	1951	1950	1951	1950	1951
Alabama ------------------------------------	52	48	11,548,036	11,069,682	80.1	81.4
Alaska -------------------------------------	2	2	175,783	195,241	42.6	39.5
Arkansas -----------------------------------	2	2	27,600	17,916	2.4	1.6
Colorado -----------------------------------	6	6	1,277,747	1,649,012	30.0	40.2
Illinois -----------------------------------	68	67	35,695,520	39,606,748	63.4	73.1
Indiana ------------------------------------	27	27	14,101,094	14,060,674	70.7	72.3
Kansas -------------------------------------	5	5	1,303,614	1,189,092	61.3	60.6
Kentucky -----------------------------------	68	75	21,198,829	26,923,389	27.0	35.9
Maryland -----------------------------------	2	—	30,343	—	4.7	—
Missouri -----------------------------------	10	10	2,397,442	2,865,138	80.9	87.6
Montana ------------------------------------	2	2	160,550	126,115	6.4	5.4
New Mexico ---------------------------------	2	1	74,290	59,635	10.2	7.6
Ohio ---------------------------------------	21	29	10,708,879	13,939,962	28.4	36.7
Oklahoma -----------------------------------	6	6	896,344	692,692	33.5	31.2
Pennsylvania 1/ ----------------------------	83	83	38,547,253	46,325,054	36.4	42.8
Tennessee ----------------------------------	6	9	353,514	607,392	7.0	11.2
Utah ---------------------------------------	6	6	2,312,384	2,039,335	34.7	33.2
Virginia -----------------------------------	21	29	4,796,515	7,356,766	27.2	34.4
Washington ---------------------------------	17	17	781,346	809,619	89.4	94.5
West Virginia 2/ ---------------------------	206	201	52,311,435	70,476,346	36.3	43.2
Total ----------------------------------	3/612	4/625	198,698,518	240,009,808	38.5	45.0

1/ Includes some coal mined in Pennslyvania and cleaned in Ohio and a small tonnage mined in other States and cleaned at a consumer-operated plant in Pennsylvania.

2/ Includes some coal mined in West Virginia and cleaned in Pennsylvania.

3/ Represents 67 plants using both wet and pneumatic methods of cleaning and 545 plants using only 1 cleaning method.

4/ Represents 71 plants using both wet and pneumatic methods of cleaning and 554 plants using only 1 cleaning method.

TABLE 44.--Operations at bituminous-coal-cleaning plants in the United States, by States, 1951, in net tons

State	Total raw coal moved to cleaning plants	Coal obtained in cleaning process	Refuse resulting in cleaning process	Ratio of refuse to raw coal (percent) 1/	Total production from mines served by cleaning plants
Alabama	15,288,106	11,069,682	4,218,424	27.6	11,805,039
Alaska	229,181	195,241	33,940	14.8	195,241
Arkansas	21,216	17,916	3,300	15.6	76,578
Colorado	216,612	197,278	19,334	8.9	419,352
Illinois	47,166,343	39,606,748	7,559,595	16.0	46,098,866
Indiana	16,522,813	14,060,674	2,462,139	14.9	16,179,093
Kansas	1,470,674	1,189,092	281,582	19.1	1,240,936
Kentucky	31,683,044	26,923,389	4,759,655	15.0	32,602,090
Missouri	3,593,259	2,865,138	728,121	20.3	2,883,209
Montana	136,468	126,115	10,353	7.6	149,913
New Mexico	65,359	59,635	5,724	8.8	535,430
Ohio	17,559,941	13,939,962	3,619,979	20.6	18,863,205
Oklahoma	794,992	692,692	102,300	12.9	822,192
Pennsylvania 2/	50,529,961	40,153,258	10,376,703	20.5	48,577,287
Tennessee	684,413	607,392	77,021	11.3	1,293,422
Utah	2,302,158	2,039,335	262,823	11.4	3,027,590
Virginia	8,134,453	7,356,766	777,687	9.6	12,116,825
Washington	1,034,477	809,619	224,858	21.7	833,008
West Virginia 3/	83,962,969	70,476,346	13,486,623	16.1	104,545,826
Total at mines only 4/	281,396,439	232,386,278	49,010,161	17.4	302,265,102
Consumer plants 5/	8,441,061	7,623,530	817,531	9.7	---
Grand total 1951	289,837,500	240,009,808	49,827,692	17.2	---

1/ In Alabama (for example) for every 100 tons of raw coal cleaned in 1951, an average of 27.6 tons of refuse was discarded and 72.4 tons of clean marketable coal was obtained.

2/ Includes some coal that was mined in Pennsylvania and cleaned in Ohio.

3/ Includes some coal that was mined in West Virginia and cleaned in Pennsylvania.

4/ Includes all mechanical cleaning other than washeries operated by consumer steel companies.

5/ Includes central washeries in Colorado and Pennsylvania operated by consumer steel companies.

BY STATES AND COUNTIES

Detailed production and employment statistics are given in table 45 for each coal-producing county in the United States from which three or more operators submitted reports for 1951. Statistics on counties with less than three reporting producers have been combined with data for other counties in the same State to avoid disclosing individual figures, unless the operators have granted permission to publish them separately. Production of mines on the border between two States has been credited to the State from which the coal was extracted rather than to that in which the tipple was situated. If the coal is mined from lands in both States, the tonnage has been apportioned accordingly.

The data in the present report, as in those published for many years by the Bureau of Mines, relate only to mines with an annual output of 1,000 tons or more. That fact should be borne in mind when the statistics in this report are compared with similar data compiled by State mine departments. Differences arise largely from variations in coverage by State reports, some of which include data for all mines regardless of size, and others only data for mines employing more than a specified minimum number, ranging from 2 to 10 men.

Because of a change in method of reporting, beginning with 1946, statistics of average production per man per day are not precisely comparable with those for other years. The figures since 1946 are based on the average number of men working daily, whereas the figures for previous years were based on the average number of men on the rolls per pay period.

Table 45.--Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951

(Exclusive of mines producing less than 1,000 tons)

28111

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
							Surface					
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Under-ground	In strip pits	All others	Total			
ALABAMA												
Bibb	211,873	47,819	5,766	265,458	$7.12	396	—	98	494	157	77,407	3.43
Blount	152,704	63,975	20	216,699	6.27	82	78	38	198	202	39,988	5.42
Cherokee	—	6,242	—	6,242	5.34	—	6	—	6	192	1,152	5.42
Cullman	11,057	59,129	2,280	72,466	6.56	67	27	19	113	181	20,500	3.53
Jackson	—	3,722	—	3,722	5.39	9	—	—	9	160	1,440	2.58
Jefferson	8,376,404	177,526	51,335	8,605,265	6.28	7,500	96	1,566	9,162	209	1,910,656	4.50
Marion	130,981	168,985	2,028	301,994	8.14	462	—	110	572	181	103,598	2.92
St. Clair	—	10,611	—	10,611	5.80	14	2	2	18	192	3,456	3.07
Shelby	14,750	88,610	—	103,360	6.19	155	11	23	189	178	33,696	3.07
Tuscaloosa	630,445	68,382	1,273	700,100	4.61	130	186	82	398	204	81,352	8.61
Walker	2,225,981	305,180	778,364	3,309,525	5.51	1,922	304	434	2,660	168	447,601	7.39
Winston	1,000	540	—	1,540	5.76	3	—	—	3	150	450	3.42
Total Alabama	11,755,195	1,000,721	841,066	13,596,982	6.06	10,740	710	2,372	13,822	197	2,721,296	5.00
ALASKA												
Total Alaska	486,678	3,900	3,755	494,333	$7.62	120	58	75	253	243	61,371	8.05
ARIZONA												
Navajo	—	4,969	—	4,969	$6.00	8	—	1	9	242	2,177	2.28
ARKANSAS												
Franklin	73,695	6,655	—	80,350	$7.25	167	14	27	208	118	24,511	3.28
Johnson	416,268	5,677	408	422,353	7.33	181	86	58	325	142	46,196	9.14
Logan	163,660	1,789	116	165,565	9.40	425	—	77	502	111	55,901	2.96
Pope	20,935	2,324	200	23,459	8.66	60	4	18	82	97	7,988	2.65
Sebastian	401,152	13,596	230	414,978	7.82	517	91	95	703	166	116,624	2.78
Total Arkansas	1,075,710	30,041	954	1,106,705	7.85	1,350	195	275	1,820	138	251,220	4.41

For footnotes see end of table.

Table 45.--Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

78131

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
CALIFORNIA (LIGNITE)												
Amador	—	—	3,657	3,657	$10.25	—	3	—	3	125	375	9.75
COLORADO												
Boulder	23,078	88,343	2,502	113,923	$5.35	109	—	24	133	169	22,427	5.08
Delta	40,651	32,853	1,431	74,935	4.57	58	—	13	71	189	13,429	5.58
El Paso	12,666	54,387	22,567	89,620	4.58	62	5	12	79	223	17,612	5.09
Fremont	72,584	205,984	898	279,466	4.71	164	8	58	230	193	44,446	6.29
Garfield	5,013	33,111	—	38,124	5.26	27	—	4	31	237	7,361	5.18
Gunnison	273,807	56,690	10,818	341,315	5.50	351	—	125	476	128	60,934	5.60
Huerfano	267,236	39,962	2,562	309,760	5.73	333	—	82	415	168	69,644	4.45
Jackson	—	3,354	—	3,354	5.34	—	8	—	8	155	1,236	2.71
Jefferson	14,745	6,374	—	21,119	4.88	18	—	2	20	212	4,240	4.98
La Plata	11,879	26,294	603	38,776	4.03	38	—	5	43	207	8,917	4.35
Las Animas	927,446	43,057	20,916	991,419	6.44	1,083	—	199	1,282	222	285,009	3.48
Mesa	59,158	29,939	581	89,678	4.72	59	—	22	81	216	17,475	5.13
Moffat	86,764	23,332	—	110,096	4.92	44	—	20	64	155	9,951	11.06
Montrose	—	2,419	—	2,419	5.14	3	—	—	3	251	753	3.21
Pitkin	4,140	3,590	—	7,730	4.60	8	—	1	9	159	1,428	5.41
Rio Blanco	20,032	15,590	39	35,661	4.82	17	—	5	22	215	4,732	7.54
Routt	624,470	38,540	13,011	676,021	4.73	433	35	206	674	118	79,223	8.53
Weld	581,367	282,142	15,714	879,223	4.08	442	12	95	549	179	98,503	8.93
Total Colorado	3,025,036	985,961	91,642	4,102,639	5.16	3,249	68	873	4,190	178	747,320	5.49

For footnotes see end of table.

Table 45.--Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951- continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
ILLINOIS												
Bureau	763,385	34,441	7,106	804,932	$ 4.24	—	44	92	136	285	38,760	20.77
Christian	7,971,033	101,724	54,298	8,127,055	3.15	2,978	—	823	3,801	173	658,892	12.33
Clinton	57,184	134,663	8,886	200,733	4.25	190	—	47	237	207	49,158	4.08
Douglas	139,307	15,901	1,087	156,295	4.45	42	—	12	54	230	12,422	12.58
Edgar	—	10,852	398	11,250	5.69	24	—	3	27	117	3,159	3.56
Franklin	7,024,669	178,213	231,782	7,434,664	4.73	4,767	—	1,244	6,011	155	932,501	7.97
Fulton	5,056,872	480,751	10,936	5,548,559	3.84	171	447	525	1,143	229	261,850	21.19
Gallatin	101,539	54,302	2,815	158,656	3.68	64	20	33	117	175	20,493	7.74
Greene	—	1,020	—	1,020	4.14	2	—	—	2	100	200	5.10
Grundy	337,536	83,009	197	420,742	4.92	11	88	39	138	253	34,895	12.06
Hancock	1,500	39,406	124	41,030	5.93	—	12	3	15	163	2,446	16.77
Henry	100,587	41,179	864	142,630	4.53	70	—	21	91	201	18,280	7.80
Jackson	1,390,994	90,954	9,823	1,491,771	4.16	283	113	183	579	215	124,545	11.98
Jefferson	802,269	9,840	7,334	819,443	4.61	403	--	211	614	172	105,613	7.76
Kankakee	671,654	85,861	--	757,515	4.86	--	159	56	215	262	56,338	13.45
Knox	2,016,328	96,024	1,496	2,113,848	3.96	71	155	296	522	235	122,906	17.20
La Salle	—	18,879	2,983	21,862	5.82	10	13	4	27	166	4,473	4.89
Livingston	—	2,695	—	2,695	7.22	—	5	—	5	125	625	4.31
Logan	—	48,256	—	48,256	5.58	34	--	10	44	180	7,916	6.10
Macoupin	2,143,249	101,190	116,573	2,361,012	3.99	1,930	—	471	2,401	133	320,067	7.38
Madison	561,614	805,711	45,105	1,412,430	4.08	856	—	224	1,080	190	205,138	6.89
Marion	139,160	30,552	6,386	176,098	3.79	102	—	40	142	198	28,116	6.26
Menard	—	21,087	265	21,352	6.12	44	--	11	55	195	10,709	1.99
Montgomery	574,102	20,355	47,342	641,799	3.94	364	—	132	496	164	81,304	7.89
Peoria	112,670	293,744	2,930	409,344	4.25	337	52	63	452	124	55,907	7.32
Perry	4,393,306	129,483	39,694	4,562,483	3.77	845	306	573	1,724	188	323,772	14.09
Randolph	1,546,146	118,706	6,511	1,671,363	3.68	267	55	192	514	175	90,004	18.57
St. Clair	2,034,891	1,593,406	41,107	3,669,404	3.84	841	142	306	1,289	215	277,034	13.25
Saline	3,442,883	57,104	40,495	3,540,482	4.78	1,967	95	701	2,763	138	380,810	9.30
Sangamon	168,622	460,956	20,024	649,602	4.83	711	—	129	840	115	96,460	6.73
Schuyler	—	28,353	10	28,363	4.95	26	13	10	49	183	8,964	3.16
Tazewell	—	46,887	818	47,705	6.08	65	--	11	76	152	11,520	4.14
Vermilion	760,825	287,879	4,154	1,052,858	4.23	106	89	63	258	222	57,181	18.41
Warren	—	2,296	20	2,316	7.03	4	--	1	5	310	1,550	1.49
Washington	8,898	19,511	746	29,155	4.23	65	--	14	79	118	9,314	3.13
Will	61,230	104,774	—	166,004	5.50	—	24	19	43	254	10,923	15.20
Williamson	5,028,699	399,115	25,123	5,452,937	4.36	1,857	134	726	2,717	178	483,736	11.27
Woodford	—	1,979	233	2,212	3.99	48	—	7	55	28	1,540	1.44
Total Illinois	47,411,152	6,051,058	737,665	54,199,875	4.07	19,555	1,966	7,295	28,816	170	4,909,521	11.04

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

78111

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
				INDIANA								
Clay	1,052,859	246,910	5,224	1,304,993	$ 4.11	--	371	99	470	246	115,389	11.31
Daviess	416,913	30,119	—	447,032	4.35	8	59	48	115	298	34,223	13.06
Dubois	1,650	50,858	—	52,508	3.69	80	—	12	92	110	10,160	5.17
Fountain	—	66,821	—	66,821	5.76	—	25	5	30	252	7,560	8.84
Gibson	576,380	112,533	21,774	710,687	4.43	495	32	107	634	143	90,904	7.82
Greene	379,433	33,121	1,854	414,408	4.44	31	50	30	111	238	26,376	15.71
Knox	2,281,252	528,002	12,681	2,821,935	3.83	1,056	67	310	1,433	182	260,629	10.83
Martin	—	1,600	—	1,600	4.55	2	—	—	2	200	400	4.00
Owen	153,036	6,126	463	159,625	4.71	—	35	5	40	230	9,180	17.39
Parke	—	14,464	—	14,464	5.18	21	—	3	24	91	2,184	6.62
Pike	3,139,941	49,301	20,710	3,209,952	3.81	10	466	231	707	269	190,030	16.89
Spencer	49,650	4,098	—	53,748	4.76	20	14	10	44	127	5,588	9.62
Sullivan	2,495,153	114,576	15,487	2,625,216	4.12	980	178	331	1,489	174	258,375	10.16
Vermillion	197,032	59,757	1,205	257,994	4.22	48	24	26	98	218	21,315	12.10
Vigo	3,323,664	289,172	410,413	4,023,249	4.24	2,044	118	442	2,604	179	465,549	8.64
Warrick	3,114,176	167,678	4,359	3,286,213	3.85	393	307	408	1,108	205	226,822	14.49
Total Indiana	17,181,139	1,775,136	494,170	19,450,445	4.04	5,188	1,746	2,067	9,001	192	1,724,684	11.28

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

78111

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
IOWA												
Appanoose	45,475	88,871	8,608	142,954	$5.09	357	—	44	401	162	64,875	2.20
Boone	—	20,247	—	20,247	5.59	26	—	8	34	145	4,925	4.11
Davis	28,625	58,469	99	87,193	3.48	15	14	9	38	240	9,117	9.56
Greene	—	1,142	—	1,142	4.36	6	—	—	6	36	216	5.29
Guthrie	—	1,240	15	1,255	8.40	6	—	1	7	64	448	2.80
Jasper	—	7,251	—	7,251	4.18	34	4	7	45	48	2,138	3.39
Lucas	8,371	16,358	—	24,729	5.35	43	—	8	51	123	6,257	3.95
Mahaska	46,439	55,159	5,137	106,735	3.56	6	51	7	64	224	14,336	7.45
Marion	606,028	312,935	312	919,275	3.37	118	189	77	384	209	80,381	11.44
Monroe	56,575	72,776	172	129,523	4.22	142	—	21	163	173	28,131	4.60
Page	—	5,745	—	5,745	8.00	12	—	3	15	162	2,430	2.36
Van Buren	8,754	44,076	112	52,942	4.33	14	23	13	50	175	8,732	6.06
Wapello	45,443	75,126	15	120,584	3.69	14	35	18	67	221	14,822	8.14
Warren	—	10,723	—	10,723	4.41	15	—	3	18	188	3,386	3.17
Total Iowa	845,710	770,118	14,470	1,630,298	3.75	808	316	219	1,343	179	240,194	6.79
KANSAS												
Bourbon	57,084	22,951	96	80,131	$3.83	—	45	16	61	141	8,604	9.31
Cherokee	575,978	37,776	1,378	615,132	3.88	11	168	108	287	160	45,951	13.39
Coffey	—	3,406	—	3,406	5.87	—	9	—	9	120	1,080	3.15
Crawford	682,486	81,389	3,672	767,547	4.03	143	180	107	430	181	77,822	9.86
Franklin	—	1,300	—	1,300	6.50	6	—	1	7	57	399	3.26
Labette	—	2,993	—	2,993	5.40	—	6	—	6	199	1,191	2.51
Linn	449,687	7,637	—	457,324	3.73	—	37	47	84	233	19,555	23.39
Osage	17,589	15,627	52	33,268	6.08	52	23	7	82	153	12,573	2.65
Total Kansas	1,782,824	173,079	5,198	1,961,101	3.94	212	468	286	966	173	167,175	11.73

For footnotes see end of table.

Table 45.--Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
					KENTUCKY							
Eastern Kentucky:												
Bell	1,679,250	517,467	14,933	2,211,650	$5.63	2,583	87	347	3,017	156	471,843	4.69
Boyd	186,218	224,715	-	410,933	4.49	221	61	42	324	218	70,538	5.83
Breathitt	988,745	165,037	1,850	1,155,632	5.46	549	47	138	734	193	141,572	8.16
Carter	44,565	259,743	111	304,419	5.09	371	-	54	425	141	59,758	5.09
Clay	301,483	308,704	648	610,835	5.13	774	18	121	913	176	160,892	3.80
Clinton	-	53,500	-	53,500	4.22	63	-	10	73	129	9,448	5.66
Elliott	-	380,581	-	380,581	4.68	149	72	36	257	218	56,032	6.79
Floyd	5,834,456	669,628	9,143	6,513,227	5.73	4,934	-	921	5,855	197	1,153,350	5.65
Greenup	-	236,208	-	236,208	4.69	131	20	25	176	216	37,970	6.22
Harlan	10,552,474	447,608	160,885	11,160,967	5.86	10,214	34	1,516	11,764	199	2,339,676	4.77
Jackson	-	498,557	-	498,557	5.09	557	45	67	669	151	101,266	4.92
Johnson	479,316	424,473	251	904,040	5.54	1,345	-	191	1,536	143	219,073	4.13
Knott	698,633	414,852	576	1,114,061	4.69	922	-	110	1,032	136	140,251	7.94
Knox	210,224	295,101	1,041	506,366	5.54	598	36	53	687	134	92,015	5.50
Laurel	24,177	88,043	-	112,220	5.02	130	3	22	155	180	27,952	4.01
Lawrence	-	85,512	-	85,512	4.17	117	-	12	129	194	25,016	3.42
Lee	72,300	214,796	-	287,096	5.34	286	8	37	331	171	56,768	5.06
Leslie	1,867,371	505,587	3,258	2,376,216	4.85	1,484	-	237	1,721	159	273,705	8.68
Letcher	3,674,478	1,087,908	46,803	4,809,189	5.85	3,488	46	582	4,116	174	715,226	6.72
Madison	-	1,400	-	1,400	4.79	-	4	-	4	58	232	6.03
Magoffin	131,268	2,866	1,784	135,918	3.82	13	44	8	65	168	10,930	12.44
Martin	161,873	28,997	227	191,097	4.86	210	-	45	255	118	29,985	6.37
McCreary	422,636	409,797	4,171	836,604	5.95	890	51	124	1,065	159	169,608	4.93
Menifee	-	9,100	-	9,100	5.60	16	-	1	17	163	2,779	3.27
Morgan	-	218,076	-	218,076	5.01	173	30	31	234	161	37,563	5.81
Owsley	-	10,905	-	10,905	5.73	29	-	1	30	103	3,103	3.51
Perry	5,707,205	437,815	25,220	6,170,240	5.24	4,830	-	989	5,819	170	988,235	6.24
Pike	8,701,621	1,669,662	213,590	10,584,873	4.98	7,881	-	1,293	9,174	201	1,842,082	5.75
Pulaski	-	481,491	-	481,491	4.72	311	58	31	400	179	71,700	6.72
Rockcastle	-	213,631	-	213,631	4.66	179	37	14	230	148	34,051	6.27
Wayne	-	46,904	-	46,904	3.83	65	-	1	66	158	10,457	4.49
Whitley	193,719	218,242	974	412,935	5.50	401	105	80	586	161	94,215	4.38
Wolfe	-	37,340	-	37,340	5.18	38	10	1	49	161	7,873	4.74
Total Eastern Kentucky	41,932,012	10,664,246	485,465	53,081,723	5.41	43,952	816	7,140	51,908	182	9,455,164	5.61

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface: In strip pits	Surface: All others	Total			
KENTUCKY - Continued												
Western Kentucky:												
Butler	-	107,280	-	107,280	$3.93	87	5	11	103	147	15,091	7.11
Christian	48,200	3,435	-	51,635	4.16	41	2	6	49	184	9,030	5.72
Daviess	172,012	310,515	-	482,527	3.68	187	39	42	268	148	39,774	12.13
Grayson	-	4,000	-	4,000	4.09	-	5	-	5	65	325	12.31
Hancock	6,600	41,708	-	48,308	3.53	-	15	10	25	136	3,406	14.18
Henderson	15,050	356,934	-	371,984	3.16	277	-	39	316	203	63,993	5.81
Hopkins	11,989,659	687,735	6,171	12,683,565	3.74	2,481	590	1,038	4,109	205	844,138	15.03
McLean	-	34,145	-	34,145	4.09	37	-	3	40	137	5,491	6.22
Muhlenberg	4,785,466	272,904	20,104	5,078,474	3.30	1,466	270	519	2,255	161	362,743	14.00
Ohio	2,088,276	148,254	1,620	2,238,150	3.69	258	137	241	636	192	122,264	18.31
Union	458,029	61,939	2,706	522,674	3.65	216	-	48	264	210	55,518	9.41
Webster	256,511	11,359	-	267,870	3.78	53	27	20	100	158	15,761	17.00
Total Western Kentucky	19,819,803	2,040,208	30,601	21,890,612	3.62	5,103	1,090	1,977	8,170	188	1,537,534	14.24
Total Kentucky	61,751,815	12,704,454	516,066	74,972,335	4.89	49,055	1,906	9,117	60,078	183	10,992,698	6.82

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
MARYLAND												
Allegany	97,052	217,968	1,469	316,489	$4.78	288	65	29	382	192	73,297	4.32
Garrett	107,072	164,958	120	272,150	4.66	215	75	40	330	172	56,731	4.80
Total Maryland	204,124	382,926	1,589	588,639	4.73	503	140	69	712	180	130,028	4.53
MICHIGAN												
Saginaw	—	6,267	1,080	7,347	$10.19	28	—	2	30	151	4,530	1.62
MISSOURI												
Adair	—	88,673	1,485	90,158	$5.05	118	—	26	144	177	25,517	3.53
Barton	252,900	35,049	85	288,034	4.25	—	58	33	91	216	19,633	14.67
Bates	365,714	5,576	—	371,290	3.73	—	36	38	74	228	16,853	22.03
Boone	—	33,002	26	33,028	4.03	—	13	4	17	227	3,867	8.54
Callaway	—	141,957	—	141,957	4.70	—	36	13	49	277	13,571	10.46
Clay	—	22,100	2,182	24,282	8.10	92	—	7	99	114	11,283	2.15
Dade	—	7,150	—	7,150	3.85	—	7	—	7	200	1,400	5.11
Daviess	—	5,022	—	5,022	8.16	16	—	2	18	155	2,790	1.80
Harrison	—	3,596	—	3,596	6.80	13	—	2	15	160	2,400	1.50
Henry	612,868	65,188	—	678,056	3.91	—	136	69	205	191	39,215	17.29
Johnson	—	2,012	—	2,012	5.50	—	3	—	3	194	582	3.46
Lafayette	—	26,394	243	26,637	6.34	67	—	11	78	193	15,066	1.77
Linn	—	5,706	—	5,706	5.88	23	—	4	27	171	4,628	1.23
Macon	698,245	45,521	73	743,839	3.88	26	70	65	161	240	38,583	19.28
Putnam	—	8,438	—	8,438	4.95	19	—	3	22	109	2,400	3.52
Ralls	—	5,212	—	5,212	5.62	9	7	3	19	118	2,250	2.32
Randolph	464,123	62,665	—	526,788	4.27	135	49	57	241	201	48,363	10.89
Ray	—	3,318	—	3,318	7.66	26	—	4	30	114	3,420	.97
St. Clair	219,280	6,205	—	225,485	3.77	—	57	21	78	195	15,181	14.85
Vernon	66,840	12,435	—	79,275	3.90	—	34	9	43	171	7,365	10.76
Total Missouri	2,679,970	585,219	4,094	3,269,283	4.10	544	506	371	1,421	193	274,367	11.92

For footnotes see end of table.

Table 45.--Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
MONTANA												
Bituminous Coal:												
Blaine	-	9,678	150	9,828	$6.36	9	-	2	11	300	3,300	2.98
Carbon	135,588	12,514	1,811	149,913	4.79	77	-	27	104	210	21,879	6.85
Cascade	761	17,344	-	18,105	5.14	8	-	2	10	209	2,085	8.68
Musselshell	612,855	26,675	4,672	644,202	4.21	328	-	158	486	192	93,410	6.90
Rosebud	1,485,852	-	2,448	1,488,300	1.65	-	55	15	70	225	15,780	94.32
Total Bituminous Coal	2,235,056	66,211	9,081	2,310,348	2.61	422	55	204	681	200	136,454	16.93
Lignite:												
Custer	-	11,190	19	11,209	3.74	9	-	-	9	143	1,284	8.73
Dawson	-	2,028	-	2,028	3.50	2	-	-	2	156	312	6.50
Richland	-	8,150	-	8,150	3.96	3	-	1	4	304	1,215	6.71
Sheridan	-	13,533	150	13,683	3.06	3	4	3	10	195	1,951	7.01
Total Lignite		34,901	169	35,070	3.51	17	4	4	25	190	4,762	7.36
Total Montana	2,235,056	101,112	9,250	2,345,418	2.63	439	59	208	706	200	141,216	16.61
NEW MEXICO												
Bernalillo	-	1,290	20	1,310	$5.09	3	-	1	4	131	524	2.50
Colfax	616,799	19,865	741	637,405	5.69	436	-	72	508	212	107,790	5.91
McKinley	50,574	16,513	11,149	78,236	6.69	169	-	35	204	98	19,956	3.92
RioArriba	20,115	2,615	24	22,754	4.34	29	-	4	33	192	6,329	3.60
Sandoval	2,410	-	-	2,410	5.69	4	-	-	4	134	535	4.50
San Juan	2,789	1,009	-	3,798	5.74	10	-	1	11	112	1,227	3.10
Santa Fe	17,448	17,447	-	34,895	5.71	47	-	8	55	192	10,560	3.30
Socorro	-	1,890	-	1,890	5.70	5	-	1	6	140	840	2.25
Total New Mexico	710,135	60,629	11,934	782,698	5.75	703	-	122	825	179	147,761	5.30

For footnotes see end of table.

Table 45.--Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

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County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
NORTH DAKOTA (LIGNITE)												
Adams	21,558	10,621	-	32,179	$3.28	2	12	-	14	161	2,252	14.29
Bowman	119,072	5,439	-	124,511	1.68	-	6	5	11	276	3,032	41.07
Burke	347,426	33,416	50,220	431,062	2.49	-	27	41	68	265	18,016	23.93
Burleigh	-	22,582	-	22,582	3.18	-	6	-	6	240	1,440	15.68
Divide	290,890	27,854	-	318,744	2.29	-	18	22	40	271	10,848	29.38
Dunn	-	15,615	185	15,800	2.83	-	6	-	6	181	1,084	14.58
Golden Valley	-	2,093	45	2,138	2.79	2	-	-	2	138	276	7.75
Grant	-	29,180	-	29,180	3.09	3	12	-	15	126	1,890	15.44
Hettinger	40	17,268	25	17,333	2.90	-	10	1	11	161	1,771	9.79
McKenzie	-	3,273	-	3,273	3.75	2	2	-	4	212	848	3.86
McLean	271,212	56,677	280	328,169	2.45	-	36	33	69	239	16,506	19.88
Mercer	1,040,681	21,083	112,449	1,174,213	2.29	73	67	98	238	246	58,657	20.02
Morton	-	33,894	-	33,894	2.54	4	16	-	20	161	3,214	10.55
Mountrail	-	7,063	25	7,088	3.58	3	2	-	5	108	540	13.13
Oliver	-	6,920	-	6,920	2.50	-	3	-	3	108	324	21.36
Stark	-	19,083	100,868	119,951	2.53	-	24	6	30	256	7,671	15.64
Ward	422,777	117,379	120	540,276	2.61	11	48	58	117	256	29,971	18.03
Williams	-	16,664	50	16,714	3.38	10	6	1	17	141	2,402	6.96
Total North Dakota	2,513,656	446,104	264,267	3,224,027	2.41	110	301	265	676	238	160,742	20.06

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
				OHIO								
Athens	736,391	231,942	2,008	970,341	$4.79	684	47	200	931	166	154,478	6.28
Belmont	8,174,898	386,433	16,465	8,577,796	4.04	3,476	197	891	4,564	225	1,026,147	8.36
Carroll	167,039	164,141	2,005	333,185	4.05	163	74	27	264	194	51,110	6.52
Columbiana	194,823	1,190,395	323	1,385,541	3.57	120	375	89	584	220	128,323	10.80
Coshocton	538,361	488,520	6,276	1,033,157	3.85	180	182	102	464	222	102,968	10.03
Gallia	446,917	144,049	—	590,966	3.35	332	94	80	506	183	92,554	6.39
Guernsey	488,141	73,601	309	562,051	3.91	106	121	54	281	212	59,509	9.44
Harrison	6,736,405	188,082	13,448	6,937,935	3.99	532	560	705	1,797	217	390,225	17.78
Hocking	40,046	94,680	—	134,726	4.11	80	47	18	145	138	20,015	6.73
Holmes	—	7,937	—	7,937	2.91	—	6	—	6	160	960	8.27
Jackson	147,713	156,524	4,421	308,658	3.67	68	112	40	220	188	41,456	7.45
Jefferson	3,943,480	1,629,702	18,870	5,592,052	3.93	1,434	447	573	2,454	223	547,715	10.21
Lawrence	—	224,911	—	224,911	4.18	99	51	26	176	190	33,491	6.72
Mahoning	9,813	745,624	6,130	761,567	3.82	—	196	36	232	239	55,501	13.72
Meigs	457,221	55,831	—	513,052	3.42	264	60	46	370	213	78,769	6.51
Morgan	95,205	74,548	—	169,753	3.41	34	42	9	85	178	15,112	11.23
Muskingum	811,341	790,924	351	1,602,616	2.68	282	180	140	602	193	116,245	13.79
Noble	1,382,038	82,631	19	1,464,688	2.88	3	177	93	273	214	58,479	25.05
Perry	2,369,402	359,157	579	2,729,138	4.28	1,017	358	369	1,744	163	285,060	9.57
Portage	—	158,290	24,620	182,910	4.15	—	29	15	44	320	14,080	12.99
Scioto	—	1,618	—	1,618	5.44	—	4	—	4	74	296	5.47
Stark	998	949,925	—	950,923	3.22	29	261	61	351	214	74,978	12.68
Tuscarawas	120,950	2,268,385	74,251	2,463,586	3.86	657	300	173	1,130	237	267,526	9.21
Vinton	73,936	164,089	48	238,073	4.24	73	112	19	204	182	37,133	6.41
Washington	31,647	74,916	—	106,563	3.46	—	21	8	29	191	5,536	19.25
Wayne	—	104,854	95	104,949	4.25	—	23	10	33	306	10,098	10.39
Total Ohio	26,966,765	10,811,709	170,218	37,948,692	3.87	9,633	4,076	3,784	17,493	210	3,667,764	10.35

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
					OKLAHOMA							
Coal	53,875	18,392	-	72,267	$5.17	10	34	17	61	162	9,899	7.30
Craig	50,329	6,995	1,380	58,704	4.13	-	33	5	38	217	8,252	7.11
Haskell	349,850	40,349	1,900	392,099	6.88	220	98	54	372	201	74,746	5.25
Le Flore	348,003	13,319	5	361,327	7.66	217	91	58	366	186	67,935	5.32
McIntosh	100,199	1,638	-	101,837	3.09	-	29	10	39	172	6,707	15.18
Muskogee	-	2,268	-	2,268	5.74	3	4	1	8	129	1,032	2.20
Okmulgee	445,370	12,226	-	457,596	5.42	348	36	90	474	145	68,664	6.66
Pittsburg	297,067	2,115	120	299,302	8.72	346	-	47	393	231	90,921	3.29
Rogers	317,565	14,339	2,750	334,654	4.73	-	96	37	133	257	34,192	9.79
Sequoyah	136,404	689	-	137,093	5.58	-	28	7	35	265	9,275	14.78
Tulsa	-	4,203	-	4,203	4.02	15	-	3	18	188	3,384	1.24
Wagoner	-	1,879	-	1,879	3.87	-	8	-	8	76	608	3.09
Total Oklahoma	2,098,662	118,412	6,155	2,223,229	6.24	1,159	457	329	1,945	193	375,615	5.92

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

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County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface: In strip pits	Surface: All others	Total			
PENNSYLVANIA (BITUMINOUS COAL)												
Allegheny	8,593,806	2,239,284	1,227,227	12,060,317	$5.19	7,024	480	1,381	8,885	223	1,985,530	6.07
Armstrong	3,596,604	502,740	8,777	4,108,121	4.25	1,664	576	417	2,657	188	498,304	8.24
Beaver	64,448	358,285	—	422,733	4.61	60	122	48	230	218	50,040	8.45
Bedford	222,626	67,279	—	289,905	5.76	297	52	48	397	158	62,880	4.61
Blair	113,091	142,581	2,554	258,226	4.71	106	43	22	171	236	40,375	6.40
Bradford	—	10,039	—	10,039	5.05	5	5	2	12	158	1,900	5.28
Butler	1,377,243	890,060	6,617	2,273,920	4.01	512	516	234	1,262	199	250,687	9.07
Cambria	12,129,301	701,425	958,907	13,789,633	5.98	11,030	345	2,167	13,542	214	2,902,273	4.75
Cameron	41,331	31,234	—	72,565	4.01	—	25	3	28	241	6,745	10.76
Centre	685,043	407,708	205	1,092,956	4.19	301	327	92	720	195	140,191	7.80
Clarion	1,882,942	931,175	19,475	2,833,592	3.59	307	663	283	1,253	223	278,921	10.16
Clearfield	5,675,965	547,532	14,890	6,238,387	4.61	2,407	1,356	717	4,480	197	881,688	7.08
Clinton	324,629	387,339	—	711,968	3.20	43	165	44	252	245	61,787	11.52
Elk	616,653	195,845	571	813,069	4.83	310	186	111	607	163	99,105	8.20
Fayette	5,654,899	1,977,747	3,004,874	10,637,520	5.93	7,452	329	1,127	8,908	229	2,042,649	5.21
Forest	—	1,065	—	1,065	5.26	1	—	1	2	243	486	2.19
Greene	11,649,413	204,722	41,093	11,895,228	5.64	7,214	39	1,385	8,638	233	2,015,012	5.90
Indiana	6,712,070	528,117	561,316	7,801,503	5.18	4,551	450	946	5,947	203	1,206,776	6.46
Jefferson	1,776,977	147,137	1,279	1,925,393	4.38	951	383	234	1,568	190	298,515	6.45
Lawrence	32,953	486,984	84	520,021	3.20	14	140	21	175	211	36,972	14.07
Lycoming	—	34,909	100	35,009	4.12	16	9	5	30	250	7,494	4.67
McKean	—	80,657	—	80,657	3.79	—	24	2	26	247	6,428	12.55
Mercer	185,567	301,058	746	487,371	4.39	143	84	44	271	210	56,843	8.57
Somerset	6,130,022	483,312	40,787	6,654,121	5.22	4,176	605	849	5,630	204	1,150,370	5.78
Tioga	84,215	71,754	997	156,966	5.54	93	22	28	143	173	24,802	6.33
Venango	74,343	374,087	386	448,816	3.82	4	97	22	123	255	31,380	14.30
Washington	14,055,354	1,386,332	734,658	16,176,344	5.64	10,608	568	2,035	13,211	216	2,850,150	5.67
Westmoreland	2,734,180	2,353,862	747,270	5,835,312	5.27	3,602	403	673	4,678	198	927,173	6.29
Other counties:												
Fulton and Huntingdon	448,757	80,677	3,652	533,086	5.93	282	135	46	463	171	79,206	6.73
Total Pennsylvania	84,862,432	15,924,946	7,376,465	108,163,843	5.29	63,173	8,149	12,987	84,309	213	17,994,682	6.01

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
SOUTH DAKOTA (LIGNITE)												
Corson and Dewey	-	28,325	25	28,350	$3.49	-	13	1	14	222	3,109	9.12
TENNESSEE												
Anderson	505,529	101,349	7,844	614,722	$5.10	797	9	132	938	116	109,123	5.63
Bledsoe	-	12,200	-	12,200	2.73	20	-	4	24	186	4,464	2.73
Campbell	1,205,943	89,568	10,152	1,305,663	6.00	1,557	48	224	1,829	170	311,619	4.19
Clairborne	839,052	48,868	7,738	895,658	5.23	914	65	134	1,113	158	175,863	5.09
Cumberland	-	72,032	-	72,032	3.52	103	-	15	118	191	22,500	3.20
Fentress	16,040	65,872	-	81,912	4.72	130	-	10	140	137	19,203	4.27
Grundy	30,553	64,900	-	95,453	4.21	31	26	15	72	148	10,649	8.96
Hamilton	9,500	92,746	-	102,246	3.56	116	15	18	149	150	22,291	4.59
Marion	560,644	252,267	2,750	815,661	5.27	665	21	79	765	188	143,566	5.68
Morgan	248,101	45,950	6,989	301,040	4.63	477	13	67	557	232	129,390	2.33
Overton	32,619	21,373	-	53,992	3.49	51	8	10	69	159	10,995	4.91
Putnam	338,127	35,672	143	373,942	3.66	156	-	37	193	222	42,904	8.72
Roane	-	2,906	-	2,906	5.27	5	-	-	5	168	840	3.46
Scott	383,451	200,744	824	585,019	3.99	313	25	78	416	191	79,315	7.38
Sequatchie	3,457	59,508	-	62,965	3.08	83	-	5	88	156	13,736	4.58
Van Buren	-	16,400	-	16,400	2.75	18	-	3	21	168	3,520	4.66
White	-	9,135	-	9,135	2.92	13	4	-	17	133	2,254	4.05
Total Tennessee	4,173,016	1,191,490	36,440	5,400,946	4.99	5,449	234	831	6,514	169	1,102,232	4.90

For footnotes see end of table.

Table 45.--Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
UTAH												
Carbon	3,852,293	205,130	208,048	4,265,471	$5.25	2,202	—	645	2,847	200	569,450	7.49
Emery	1,598,581	125,786	8,850	1,733,217	5.61	856	—	254	1,110	213	236,095	7.34
Grand	5,291	241	51	5,583	5.15	4	—	2	6	194	1,164	4.80
Iron	—	24,113	—	24,113	5.10	17	—	3	20	260	5,209	4.63
Kane	—	2,041	—	2,041	5.71	3	—	—	3	175	525	5.98
Sevier	40,757	39,619	28	80,404	3.59	42	—	14	56	199	11,139	7.22
Summit	—	22,728	—	22,728	3.48	10	—	4	14	256	3,579	6.35
Uintah	—	2,400	—	2,400	6.00	4	—	1	5	240	1,200	2.00
Total Utah	5,496,922	422,058	216,977	6,135,957	5.32	3,138	—	923	4,061	204	828,361	7.41
VIRGINIA												
Buchanan	6,159,697	233,616	26,023	6,419,336	$5.40	3,803	148	739	4,690	211	991,191	6.48
Dickenson	3,865,858	375,000	2,029	4,242,887	5.00	2,468	71	371	2,910	213	619,632	6.85
Lee	831,886	93,987	7,216	933,089	6.35	1,193	—	175	1,368	176	241,159	3.87
Montgomery	104,942	50,260	1,019	156,221	5.04	149	—	34	183	201	36,730	4.25
Russell	807,417	73,466	722	881,605	5.39	747	16	93	856	185	158,269	5.57
Scott	18,119	20,141	—	38,260	5.45	45	—	7	52	185	9,620	3.98
Tazewell	3,541,299	58,060	21,048	3,620,407	6.14	2,664	6	530	3,200	229	731,283	4.95
Wise	4,578,450	198,213	331,401	5,108,064	5.13	3,680	138	606	4,424	206	911,832	5.60
Total Virginia	19,907,668	1,102,743	389,458	21,399,869	5.42	14,749	379	2,555	17,683	209	3,699,716	5.78
WASHINGTON												
King	106,205	85,802	279	192,286	$7.40	138	24	48	210	211	44,399	4.33
Kittitas	512,606	12,561	12,931	538,098	7.08	452	17	89	558	241	134,629	4.00
Lewis	1,404	43,332	110	44,846	5.45	30	—	6	36	213	7,673	5.84
Pierce	4,507	2,164	54	6,725	7.09	7	—	2	9	176	1,584	4.25
Thurston	9,956	112	—	10,068	4.44	—	12	2	14	65	924	10.90
Whatcom	55,344	7,093	2,566	65,003	7.08	97	—	32	129	97	12,562	5.17
Total Washington	690,022	151,064	15,940	857,026	7.04	724	53	179	956	211	201,771	4.25

For footnotes see end of table

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
					WEST VIRGINIA							
Barbour	3,971,776	52,974	899	4,025,649	$4.25	1,365	371	532	2,268	175	398,025	10.11
Boone	6,952,707	130,506	12,946	7,096,159	4.98	3,612	94	1,007	4,713	214	1,007,019	7.05
Braxton	118,821	22,013	—	140,834	4.11	79	17	17	113	197	22,216	6.34
Brooke	828,733	356,680	972,976	2,158,389	4.24	698	203	166	1,067	231	245,954	8.78
Clay	965,049	17,752	13,750	996,551	5.65	525	—	166	691	243	167,666	5.94
Fayette	11,765,002	176,484	627,786	12,569,272	5.68	8,588	328	1,496	10,412	231	2,409,302	5.22
Gilmer	136,725	62,914	—	199,639	3.35	119	—	19	138	195	26,943	7.41
Grant	—	75,726	—	75,726	4.61	79	5	13	97	244	23,695	3.20
Greenbrier	2,519,641	74,583	7,319	2,601,543	5.39	1,333	198	265	1,796	226	405,434	6.42
Hancock	56,126	100,040	—	156,166	3.82	11	28	6	45	251	11,285	13.84
Harrison	9,810,870	157,426	1,824	9,970,120	4.14	3,056	783	1,000	4,839	186	900,594	11.07
Kanawha	9,563,287	235,483	106,528	9,905,298	5.02	5,251	152	977	6,380	249	1,588,226	6.24
Lewis	446,092	9,426	—	455,518	3.46	8	77	23	108	233	25,126	18.13
Lincoln	4,700	—	—	4,700	4.16	26	—	4	30	59	1,770	2.66
Logan	22,659,835	81,120	151,287	22,892,242	5.07	11,224	—	2,335	13,559	223	3,020,750	7.58
Marion	9,436,024	156,940	532,865	10,125,829	4.93	4,272	20	1,123	5,415	216	1,171,141	8.65
Marshall	508,293	45,317	3,104	556,714	4.57	389	—	71	460	215	98,984	5.62
Mason	165,244	25,835	437,224	628,303	4.69	396	—	71	467	232	108,492	5.79
McDowell	20,687,756	183,087	493,428	21,364,271	6.12	13,728	294	2,727	16,749	229	3,827,552	5.58
Mercer	2,777,353	45,014	21,575	2,843,942	6.07	1,800	268	502	2,570	211	541,791	5.25
Mineral	58,809	32,998	17	91,824	5.27	54	35	15	104	118	12,272	7.48
Mingo	7,575,071	31,443	36,786	7,643,300	5.16	4,120	92	920	5,132	213	1,094,043	6.99
Monongalia	10,774,364	431,999	6,296	11,212,659	4.43	4,775	101	1,001	5,877	207	1,215,653	9.22
Nicholas	4,198,698	108,590	41,590	4,348,878	5.27	2,910	101	461	3,472	208	722,099	6.02
Ohio	1,408,019	102,573	5,363	1,515,955	4.56	1,077	8	157	1,242	200	248,530	6.10
Pocahontas	241,714	—	—	241,714	6.66	78	36	19	133	288	38,302	6.31
Preston	1,751,024	60,219	157,961	1,969,204	4.37	1,527	174	345	2,046	189	387,414	5.08
Putnam	—	95,119	—	95,119	4.80	26	16	3	45	221	9,926	9.58
Raleigh	12,807,467	48,254	113,478	12,969,199	5.87	9,083	134	1,657	10,874	226	2,461,037	5.27
Randolph	1,700,840	33,422	8,855	1,743,117	5.27	1,025	164	251	1,440	190	273,047	6.38
Summers	9,679	—	—	9,679	5.98	12	—	2	14	99	1,386	6.98
Taylor	487,281	16,818	—	504,099	3.77	203	119	63	385	152	58,544	8.61
Tucker	221,396	237	491	222,124	5.58	185	26	34	245	161	39,411	5.64
Upshur	1,108,611	53,867	457	1,162,935	3.47	540	98	128	766	162	123,807	9.39
Wayne	428,959	8,035	—	436,994	4.47	325	—	52	377	205	77,220	5.66
Webster	1,638,976	4,703	8,494	1,652,173	5.83	1,119	11	287	1,417	207	293,355	5.63
Wyoming	8,559,906	104,284	59,794	8,723,984	6.06	5,244	101	1,055	6,400	230	1,472,240	5.93
Total West Virginia	156,344,848	3,141,881	3,823,093	163,309,822	5.23	88,862	4,054	18,970	111,886	219	24,530,251	6.66

For footnotes see end of table.

Table 45.—Production, value, employment, days active, man-days, and output per man per day at bituminous-coal and lignite mines in the United States, by States and counties, in 1951 - continued

(Exclusive of mines producing less than 1,000 tons)

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County	Production (net tons)				Average value per ton 3/	Average number of men working daily				Average number of days worked	Number of man-days worked	Average tons per man per day 4/
	Shipped by rail or water 1/	Shipped by truck	Used at mine 2/	Total		Underground	Surface		Total			
							In strip pits	All others				
WYOMING												
Campbell	261,232	27,241	18,601	307,074	$1.44	-	16	20	36	291	10,464	29.35
Carbon	1,208,990	2,979	22,979	1,234,948	4.57	270	81	135	486	201	97,783	12.63
Converse	-	4,668	-	4,668	3.69	2	2	-	4	231	924	5.05
Fremont	-	5,271	-	5,271	5.63	11	-	6	17	143	2,432	2.17
Hot Springs	10,316	14,086	63	24,465	6.26	24	-	9	33	126	4,159	5.88
Johnson	-	2,597	200	2,797	4.00	2	-	1	3	246	738	3.79
Lincoln	646,611	19,717	2,185	668,513	3.01	98	85	62	245	179	43,905	15.23
Sheridan	631,432	47,124	1,857	680,413	3.18	89	37	68	194	190	36,780	18.50
Sublette	-	1,128	-	1,128	4.48	4	-	-	4	100	400	2.82
Sweetwater	3,414,198	6,153	80,005	3,500,356	4.70	1,830	24	441	2,295	202	463,792	7.55
Total Wyoming	6,172,779	130,964	125,890	6,429,633	4.19	2,330	245	742	3,317	199	661,377	9.72
OTHER STATES												
Georgia: Walker County and North Carolina: Chatham County	-	26,614	-	26,614	$6.71	39	-	9	48	277	13,305	2.00
UNITED STATES												
Total United States	460,371,314	58,131,900	15,161,518	533,664,732	$4.92	281,868	26,102	64,927	372,897	203	75,754,858	7.04

1/ Includes coal loaded at mine directly into railroad cars or river barges, hauled by truck to railroad siding, and hauled by truck to waterway.

2/ Includes coal used by mine employees, taken by locomotive tenders at tipple, used at mine for power and heat, coal transported to point of use by conveyor or tram, coal made into beehive coke at mine, and all other uses.

3/ Value received or charged for coal f.o.b. mine, including selling cost. (Includes a value for coal not sold but used by producer, such as mine fuel and coal coked as estimated by producer at average prices that might have been received if such coal had been sold commercially.)

4/ In certain counties the average tons per man per day is large due to strip mining or mechanical loading underground.

TRANSPORTATION

TABLE 46.--Bituminous coal and lignite loaded for shipment by railroads and waterways in the United States, 1951, as reported by mine operators 1/

Route	State	Net tons	
		By State	Total for route
RAILROAD			
Alabama Central	Alabama	17,460	17,460
Alaska	Alaska	486,678	486,678
Algers, Winslow & Western	Indiana	2,241,555	2,241,555
Artemus-Jellico	Kentucky	164,974	164,974
Atchison, Topeka & Santa Fe	Colorado	226,500	1,223,137
	Illinois	286,114	
	Kansas	20,503	
	New Mexico	690,020	
Baltimore & Ohio	Illinois	198,326	41,729,124
	Indiana	545,908	
	Maryland	10,066	
	Ohio	3,847,629	
	Pennsylvania	9,201,014	
	West Virginia	27,926,181	
Bessemer & Lake Erie	Pennsylvania	3,321,786	3,321,786
Brimstone	Tennessee	143,819	143,819
Buffalo Creek & Gauley	West Virginia	861,696	861,696
Cambria & Indiana	Pennsylvania	2,955,655	2,955,655
Campbell's Creek	West Virginia	651,504	651,504
Carbon County	Utah	1,723,904	1,723,904
Central of Georgia	Alabama	3,297	3,297
	Georgia	---	---
Chesapeake & Ohio	Kentucky	11,921,191	66,451,128
	Ohio	535,887	
	Virginia	905,314	
	West Virginia	53,088,736	
Cheswick & Harmar	Pennsylvania	728,157	728,157
Chicago, Burlington & Quincy	Colorado	37,823	9,908,563
	Illinois	8,026,295	
	Iowa	243,220	
	Missouri	698,245	
	Wyoming	902,980	
Chicago & Eastern Illinois	Illinois	693,435	2,024,663
	Indiana	1,331,228	
Chicago & Illinois Midland	Illinois	6,083,359	6,083,359
Chicago, Indianapolis & Louisville	Indiana	499,128	499,128
Chicago, Milwaukee, St. Paul & Pacific	Indiana	4,029,674	4,922,122
	Montana (bituminous)	605,282	
	North Dakota (lignite)	287,166	
	South Dakota (lignite)	---	
Chicago & North Western	Illinois	2,189,379	2,189,379
Chicago, Rock Island & Pacific	Arkansas	62,592	1,273,012
	Illinois	854,316	
	Iowa	136,761	
	Missouri	179,843	
	Oklahoma	39,500	
Clinchfield	Kentucky	86,761	5,375,175
	Virginia	5,288,414	

See footnotes at end of table.

TABLE 46.—Bituminous coal and lignite loaded for shipment by railroads and waterways in the United States, 1951, as reported by mine operators 1/—Con.

Route	State	Net Tons	
		By State	Total for route
RAILROAD—continued			
Colorado & Southeastern	Colorado	108,885	108,885
Colorado & Southern	Colorado	198,542	198,542
Colorado & Wyoming	Colorado	506,432	506,432
Conemaugh & Black Lick	Pennsylvania	537,140	537,140
Cumberland & Pennsylvania	Maryland	47,674	47,674
Dardenelle & Russellville Ry. Co.	Arkansas	20,935	20,935
Denver & Rio Grande Western	Colorado	1,365,487	3,904,935
	New Mexico	20,115	
	Utah	2,519,333	
Detroit, Toledo & Ironton	Ohio	1,704	1,704
East Broad Top R. R. & Coal Co.	Pennsylvania	432,126	432,126
Erie	Ohio	193,023	875,220
	Pennsylvania	682,197	
Fort Smith & Van Buren	Oklahoma	359,621	359,621
Galesburg & Great Eastern	Illinois	505,936	505,936
Great Northern	Montana (bituminous)	761	870,086
	North Dakota (lignite)	813,981	
	Washington	55,344	
Gulf, Mobile & Ohio	Alabama	145,492	1,728,384
	Illinois	1,582,892	
Huntingdon & Broad Top Mountain R. R. & Coal Co.	Pennsylvania	239,257	239,257
Illinois Central	Alabama	131,561	27,024,684
	Illinois	12,871,907	
	Indiana	169,171	
	Kentucky	13,852,045	
Illinois Terminal	Illinois	263,233	263,233
Interstate	Kentucky	226,182	2,433,234
	Virginia	2,207,052	
Johnstown & Stony Creek	Pennsylvania	270,104	270,104
Joplin-Pittsburg	Kansas	114,405	114,405
Kanawha Central	West Virginia	100,467	100,467
Kansas City Southern	Arkansas	--	988,225
	Kansas	450,094	
	Missouri	365,714	
	Oklahoma	172,417	
Kelley's Creek & Northwestern	West Virginia	1,264,725	1,264,725
Kentucky & Tennessee	Kentucky	400,107	400,107
Lake Erie, Franklin & Clarion	Pennsylvania	637,559	637,559
Laramie, North Park & Western	Colorado	--	--
Ligonier Valley	Pennsylvania	2,400	2,400
Litchfield & Madison	Illinois	394,884	394,884
Louisville & Nashville	Alabama	2,702,238	31,761,567
	Illinois	32,110	
	Kentucky	27,848,183	
	Tennessee	883,373	
	Virginia	295,663	
Mary Lee	Alabama	614,912	614,912
Midland Valley	Arkansas	168,587	310,989
	Oklahoma	142,402	
Minneapolis & St. Louis	Illinois	1,299,270	1,301,277
	Iowa	2,007	

See footnotes at end of table.

TABLE 46.—Bituminous coal and lignite loaded for shipment by railroads and waterways in the United States, 1951, as reported by mine operators 1/—Con.

Route	State	Net Tons	
		By State	Total for route
RAILROAD—continued			
Minneapolis, St. Paul & Sault Ste. Marie	North Dakota (lignite)	683,398	683,398
Missouri-Kansas-Texas	Kansas	356,439	976,618
	Missouri	247,462	
	Oklahoma	372,717	
Missouri Pacific	Arkansas	677,376	5,920,418
	Illinois	4,606,361	
	Kansas	569,841	
	Missouri	66,840	
	Oklahoma	--	
Monongahela	Pennsylvania	2,327,260	14,017,805
	West Virginia	11,690,545	
Montana, Wyoming & Southern	Montana (bituminous)	135,588	135,588
Montour	Pennsylvania	3,674,600	3,674,600
Nashville, Chattanooga & St. Louis	Tennessee	591,197	591,197
New York Central (includes coal shipped over Kanawha & Michigan, Kelley's Creek, Toledo and Ohio Central, and Zanesville & Western)	Illinois	5,364,475	20,962,114
	Indiana	3,339,721	
	Ohio	5,556,272	
	Pennsylvania	4,736,958	
	West Virginia	1,964,688	
New York, Chicago & St. Louis	Ohio	8,085,716	8,085,716
Nicholas, Fayette & Greenbrier	West Virginia	1,950,626	1,950,626
Norfolk & Western	Kentucky	6,357,626	46,907,915
	Virginia	10,053,680	
	West Virginia	30,496,609	
Northeast Oklahoma	Kansas	5,000	5,000
Northern Pacific	Montana (bituminous)	1,493,425	2,771,480
	North Dakota (lignite)	729,111	
	Washington	548,944	
Oklahoma City-Ada-Atoka	Oklahoma	53,875	53,875
Pacific Coast	Washington	81,597	81,597
Pennsylvania (includes Pittsburgh, Cincinnati, Chicago & St. Louis)	Illinois	55,764	39,441,920
	Indiana	4,120,254	
	Ohio	6,696,432	
	Pennsylvania	28,024,421	
	West Virginia	545,049	
Peoria Terminal	Illinois	21,739	21,739
Pittsburgh & Lake Erie	Pennsylvania	1,206,423	1,206,423
Pittsburg & Shawmut	Pennsylvania	2,080,879	2,080,879
Pittsburgh, Chartiers & Youghiogheny	Pennsylvania	53,386	53,386
	Ohio	485,533	986,389
	Pennsylvania	111,873	
	West Virginia	388,983	
Preston	West Virginia	46,935	46,935
St. Louis & O'Fallon	Illinois	331,756	331,756
St. Louis-San Francisco	Alabama	1,319,271	3,362,314
	Arkansas	146,220	
	Kansas	266,542	
	Missouri	672,151	
	Oklahoma	958,130	
Southern	Alabama	1,206,712	5,163,089
	Indiana	904,500	
	Kentucky	586,165	
	Tennessee	1,413,109	
	Virginia	1,052,603	

See footnotes at end of table.

TABLE 46.—Bituminous coal and lignite loaded for shipment by railroads and waterways in the United States, 1951, as reported by mine operators 1/—Con.

Route	State	Net Tons	
		By State	Total for route
RAILROAD—continued			
Southern Iowa	Iowa	39,645	39,645
Southern Pacific	New Mexico	—	—
Springfield Terminal	Illinois	158,880	158,880
Tennessee	Tennessee	607,073	607,073
Tennessee Central	Tennessee	377,874	377,874
Tennessee Coal, Iron & Railroad Co.	Alabama	4,044,705	4,044,705
Thomas & Sayreton	Alabama	297,866	297,866
Toledo, Peoria & Western	Illinois	98,862	98,862
Union	Pennsylvania	27,367	27,367
Union Pacific	Colorado	581,367	5,855,303
	Washington	4,137	
	Wyoming	5,269,799	
Unity	Pennsylvania	455,585	455,585
Utah	Utah	1,253,685	1,253,685
Virginian	Virginia	104,942	15,404,520
	West Virginia	15,299,578	
Wabash	Illinois	429,423	1,303,215
	Iowa	424,077	
	Missouri	449,715	
West Virginia Northern	West Virginia	709,538	709,538
Western Allegheny	Pennsylvania	201,708	201,708
Western Maryland	Maryland	146,384	5,440,065
	Pennsylvania	886,446	
	West Virginia	4,407,235	
Winifrede	West Virginia	263,810	263,810
Woodward Iron Co.	Alabama	1,122,791	1,122,791
Youngstown & Southern	Ohio	12,813	12,813
Total railroad shipments		430,387,006	430,387,006
WATERWAY			
Allegheny River	Pennsylvania	1,510,791	1,510,791
Black Warrior River	Alabama	148,890	148,890
Emory River	Tennessee	153,114	153,114
Illinois River	Illinois	962,732	962,732
Kanawaha River	West Virginia	3,039,164	3,039,164
Monongahela River	Pennsylvania	20,539,091	21,599,754
	West Virginia	1,060,663	
Ohio River	Illinois	99,704	2,550,912
	Kentucky	308,581	
	Ohio	1,551,756	
	Pennsylvania	2,755	
	West Virginia	588,116	
Tennessee River	Tennessee	3,457	3,457
Youghiogheny River	Pennsylvania	15,494	15,494
Total waterway shipments		29,984,308	29,984,308
Total loaded at mines for shipment by railroads and waterways		460,371,314	460,371,314
Shipped by truck from mine to final destination		58,131,900	58,131,900
Used at mine 2/		15,161,518	15,161,518
Total production 1951		533,664,732	533,664,732

1/ Included coal loaded at mine directly into railroad cars or river barges, hauled by truck to railroad siding and hauled by truck to waterway. In general, figures show the quantity of bituminous coal and lignite originated for each railroad and waterway as reported by mine operators. It must be noted that in one year an operator may report coal loaded on the subsidiary railroad and in another year the same operator may report coal loaded on the parent railroad system.

2/ Included coal used by mine employees, taken by locomotive tenders at tipple, used at mine for power and heat, coal transported from mine to point of use by conveyor or tram, coal made into beehive coke at mine, and all other uses at mine.

TABLE 47.--Disposition of bituminous coal and lignite produced in the United States, 1940-51, by method of shipment

(Exclusive of mines producing less than 1,000 tons annually)

Year	Loaded at mine directly into railroad cars or river barges	Trucked to railroad siding or waterway for shipment	Shipped by truck from mine to final destination	All other 1/	Total
THOUSANDS OF NET TONS					
1940 -------	403,754	6,127	35,540	15,350	460,771
1941 -------	442,938	12,486	40,056	18,669	514,149
1942 -------	497,989	18,843	45,154	20,707	582,693
1943 -------	493,959	32,092	42,433	21,693	590,177
1944 -------	506,783	51,871	40,123	20,799	619,576
1945 -------	469,484	48,536	41,477	18,120	577,617
1946 -------	431,187	44,070	42,731	15,934	533,922
1947 -------	508,307	48,778	55,859	17,680	630,624
1948 -------	463,996	60,933	58,260	16,329	599,518
1949 -------	336,941	41,489	47,787	11,651	437,868
1950 -------	401,877	42,931	58,286	13,217	516,311
1951 -------	425,327	35,044	58,132	15,162	533,665
PERCENT OF TOTAL PRODUCTION					
1940 -------	87.6	1.3	7.7	3.4	100.0
1941 -------	86.2	2.4	7.8	3.6	100.0
1942 -------	85.5	3.2	7.7	3.6	100.0
1943 -------	83.7	5.4	7.2	3.7	100.0
1944 -------	81.8	8.4	6.5	3.3	100.0
1945 -------	81.3	8.4	7.2	3.1	100.0
1946 -------	80.8	8.2	8.0	3.0	100.0
1947 -------	80.6	7.7	8.9	2.8	100.0
1948 -------	77.4	10.2	9.7	2.7	100.0
1949 -------	76.9	9.5	10.9	2.7	100.0
1950 -------	77.8	8.3	11.3	2.6	100.0
1951 -------	79.7	6.6	10.9	2.8	100.0

1/ Includes coal used by mine employees, taken by locomotive tenders at tipple, used at mine for power and heat, coal transported from mine to point of use by conveyor or tram, coal made into beehive coke at mine and all other uses at mine.

TABLE 48.--Bituminous coal and lignite trucked to railroad siding or waterway for shipment, classified by distance hauled, 1940-51, in thousands of net tons

(Exclusive of mines producing less than 1,000 tons annually)

Year	Less than 2 miles	2 to 3 miles	3 to 4 miles	4 to 5 miles	5 to 6 miles	6 to 7 miles	7 to 8 miles
1940 ------	1,410	1,318	891	279	982	181	185
1941 ------	3,184	2,263	1,698	1,104	1,562	326	224
1942 ------	3,945	2,441	3,219	2,277	1,141	1,081	360
1943 ------	6,242	5,080	6,157	3,380	3,286	1,375	726
1944 ------	10,820	7,515	7,550	5,995	5,255	2,223	1,058
1945 ------	9,202	8,716	6,857	5,670	2,512	2,605	1,228
1946 ------	9,333	5,763	6,091	5,115	2,235	1,879	1,167
1947 ------	8,112	5,497	5,855	3,883	2,567	2,560	1,702
1948 ------	6,955	5,011	8,147	6,551	3,344	3,863	2,056
1949 ------	3,161	2,997	3,983	2,969	2,277	2,072	853
1950 ------	2,912	2,770	3,887	3,499	2,607	1,747	842
1951 ------	3,100	2,274	3,042	3,517	2,557	2,910	1,356

Year	8 to 9 miles	9 to 10 miles	10 to 11 miles	11 miles and over	Unspecified distance	Total	Average distance trucked (miles)
1940 ------	12	11	12	196	650	6,127	3.6
1941 ------	196	70	72	422	1,365	12,486	3.7
1942 ------	204	77	42	739	3,317	18,843	3.9
1943 ------	294	105	160	891	4,397	32,093	3.8
1944 ------	685	376	384	1,232	8,778	51,871	3.8
1945 ------	584	471	308	1,224	9,159	48,536	3.8
1946 ------	1,254	538	250	1,595	8,850	44,070	4.0
1947 ------	1,070	856	854	2,766	13,056	48,778	4.6
1948 ------	2,618	553	1,509	4,835	15,491	60,933	5.3
1949 ------	1,163	378	364	2,893	18,379	41,489	5.4
1950 ------	1,094	530	841	4,056	18,146	42,931	5.9
1951 ------	1,149	296	622	2,885	11,336	35,044	5.7

TABLE 49.--Consumption of bituminous coal and lignite, by consumer class, with retail deliveries in the United States, 1933-51, in thousands of net tons

Year	Electric power utilities 1/	Bunker foreign trade 2/	Railroads 3/ (class I)	Coke plants		Steel and rolling mills	Cement mills 4/	Other industrials 5/	Retail deliveries 5/	Total of classes shown 6/
				Beehive	Oven					
1933	27,088	1,316	72,548	1,408	38,681	10,009	2,832	83,321	80,482	317,685
1934	29,707	1,321	76,037	1,635	44,343	10,898	3,500	89,448	86,925	343,814
1935	30,936	1,576	77,109	1,469	49,046	11,747	3,516	96,937	83,990	356,326
1936	38,104	1,622	86,391	2,698	63,244	13,471	4,771	113,792	84,200	408,293
1937	41,045	1,832	88,080	4,927	69,575	12,853	5,247	127,142	80,076	430,777
1938	36,440	1,352	73,921	1,360	45,266	8,412	4,483	96,527	68,520	336,281
1939	42,304	1,477	79,072	2,298	61,216	9,808	5,274	103,079	71,570	376,098
1940	49,126	1,426	85,130	4,803	76,583	10,040	5,633	110,469	87,700	430,910
1941	59,888	1,643	97,384	10,529	82,609	10,902	6,832	124,868	97,460	492,115
1942	63,472	1,585	115,410	12,876	87,974	10,434	7,570	135,979	104,750	540,050
1943	74,036	1,647	130,283	12,441	90,019	11,238	5,851	145,518	122,764	593,797
1944	76,656	1,559	132,049	10,858	94,438	10,734	3,789	134,610	124,906	589,599
1945	71,603	1,785	125,120	8,135	87,214	10,084	4,215	129,606	121,805	559,567
1946	68,743	1,381	110,166	7,167	76,121	8,603	7,009	120,610	100,586	500,386
1947	86,009	1,689	109,296	10,475	94,325	10,048	7,938	126,948	99,163	545,891
1948	95,620	1,057	94,838	10,322	96,984	10,046	8,554	112,741	89,747	519,909
1949	80,610	874	68,123	5,354	85,882	7,451	7,988	98,957	90,299	445,538
1950	88,262	717	60,969	9,088	94,757	7,698	7,943	98,164	86,604	454,202
1951	101,898	890	54,005	11,418	102,030	7,973	8,525	105,634	76,531	468,904

1/ Federal Power Commission. Represents latest available revised figures for bituminous coal and lignite consumed by public-utility power plants in power generation, including a small quantity of coke amounting to approximately 100,000 tons annually.

2/ Bureau of Census, U. S. Department of Commerce.

3/ Association of American Railroads. Represents consumption of bituminous coal and lignite by class I railways for all uses, including locomotive, powerhouse, shop, and station fuel. The Interstate Commerce Commission reports that in 1951 consumption for all uses by class I line-haul railways, plus purchases for class II and class III railways, plus purchases by all switching terminal companies combined was 56,196,152 tons of bituminous coal and lignite.

4/ Includes a small amount of anthracite.

5/ Estimates based upon reports collected from a selected list of representatives manufacturing plants and retailers.

6/ The total of classes shown approximates grand total consumption. It is not appropriate to "calculate" consumption from production, imports, exports and changes in stocks because certain significant items of stocks are not included in year-end stocks. These items are: Stocks on Lake and Tidewater docks, stocks at other intermediate storage piles between mine and consumer and coal in transit.

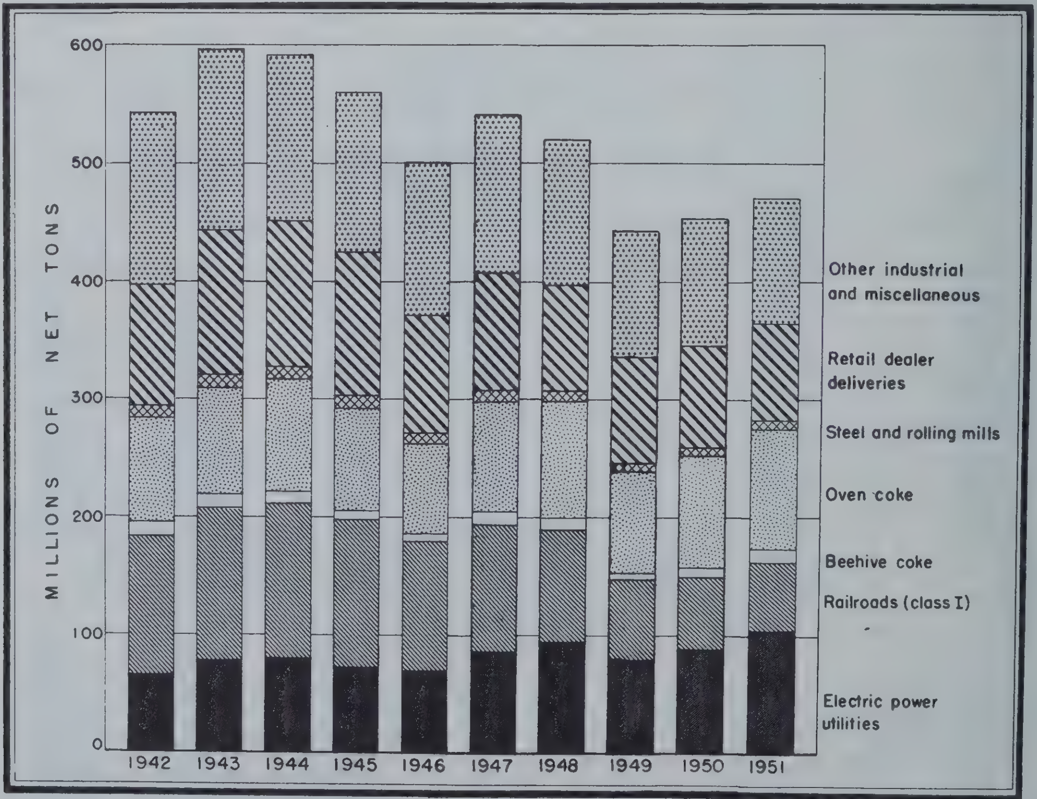

Figure 6.--Consumption of bituminous coal and lignite, by consumer class with retail dealer deliveries in the United States, 1942-51.

TABLE 50.--Fuel economy in consumption of coal at electric-utility power plants in the United States, 1919-51

Year	Pounds of coal per kilowatt-hour	Economy gain over 1919 (percent)	Year	Pounds of coal per kilowatt-hour	Economy gain over 1919 (percent)	Year	Pounds of coal per kilowatt-hour	Economy gain over 1919 (percent)
1919 --------	3.20	---	1930 ------	1.60	50.0	1941 -----	1.34	58.1
1920 --------	3.00	6.2	1931 ------	1.52	52.5	1942 -----	1.30	59.4
1921 --------	2.70	15.6	1932 ------	1.49	53.4	1943 -----	1.30	59.4
1922 --------	2.50	21.9	1933 ------	1.46	54.4	1944 -----	1.29	59.7
1923 --------	2.40	25.0	1934 ------	1.45	54.7	1945 -----	1.30	59.4
1924 --------	2.20	31.3	1935 ------	1.44	55.0	1946 -----	1.29	59.7
1925 --------	2.00	37.5	1936 ------	1.44	55.0	1947 -----	1.31	59.1
1926 --------	1.90	40.6	1937 ------	1.44	55.0	1948 -----	1.30	59.4
1927 --------	1.82	43.1	1938 ------	1.40	56.2	1949 -----	1.24	61.2
1928 --------	1.73	45.9	1939 ------	1.38	56.9	1950 -----	1.19	62.8
1929 --------	1.66	48.1	1940 ------	1.34	58.1	1951 -----	1.14	64.4

RELATIVE RATE OF GROWTH OF COAL, PETROLEUM, GAS, AND WATER POWER

The figures on relative rate of growth of fuels and energy are published in Bureau of Mines Weekly Coal Report No. 1802, March 28, 1952.

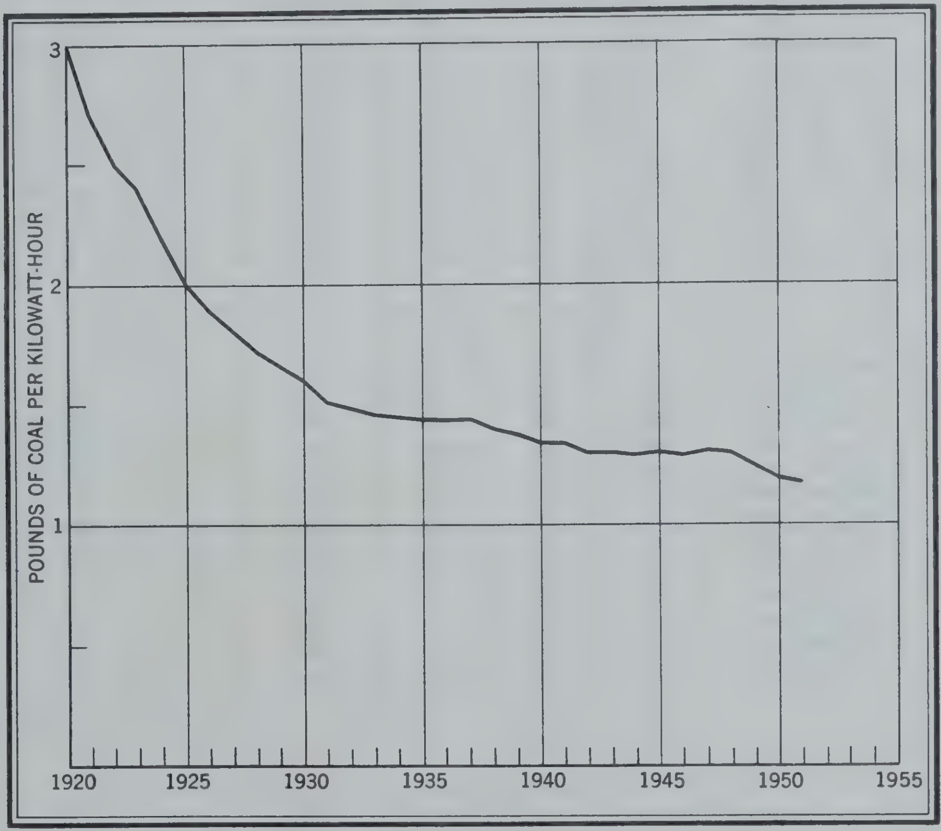

Figure 7.--Trend in fuel economy at electric-utility power plants in the United States, 1920-51.

STOCKS

Stocks of bituminous coal and lignite in the hands of industrial consumers and at retail yards in 1942-51 are shown graphically in figure 1. Stocks at upper Lake docks in 1950-51 are listed in table 1.

TABLE 51.--Stocks of bituminous coal and lignite in hands of commercial consumers and in retail dealers' yards in the United States, 1950-51

Date	Total stocks (net tons)	Days' supply at current rate of consumption on date of stock taking							
		Coke ovens	Steel plants	Other indus-trials	Electric util-ities	Retail yards	Rail-roads	Cement mills	Total
1950									
Jan. 1 ------	45,111,000	39	39	35	77	4	21	45	32
Feb. 1 ------	37,119,000	29	33	32	64	3	18	41	27
Mar. 1 ------	24,583,000	17	20	23	48	1	14	26	20
Apr. 1 ------	28,054,000	21	21	25	50	4	15	30	22
May 1 -------	37,590,000	28	31	39	63	7	16	32	31
June 1 ------	44,795,000	35	42	47	78	14	20	37	41
July 1 ------	51,376,000	42	51	54	86	15	24	43	46
Aug. 1 ------	51,979,000	39	51	63	94	13	21	47	48
Sept. 1 -----	58,964,000	47	49	63	91	10	23	50	48
Oct. 1 ------	64,293,000	52	53	68	100	11	22	54	52
Nov. 1 ------	70,478,000	57	50	69	101	14	24	56	56
Dec. 1 ------	72,131,000	61	45	61	98	12	25	55	54
Dec. 31 -----	72,516,000	61	39	58	93	8	28	53	50
1951									
Jan. 1 ------	72,516,000	61	39	58	93	8	28	53	50
Feb. 1 ------	74,006,000	61	39	59	90	6	29	59	48
Mar. 1 ------	70,662,000	60	38	56	87	6	29	58	47
Apr. 1 ------	71,425,000	60	44	60	94	7	28	55	52
May 1 -------	72,081,000	59	51	66	109	9	30	54	59
June 1 ------	74,807,000	58	63	75	121	16	32	56	67
July 1 ------	76,992,000	58	63	79	121	14	38	58	68
Aug. 1 ------	74,100,000	50	68	84	127	16	36	58	69
Sept. 1 -----	75,414,000	51	62	79	116	12	33	59	64
Oct. 1 ------	76,245,000	51	63	81	120	10	33	59	64
Nov. 1 ------	78,019,000	53	57	72	115	9	30	60	60
Dec. 1 ------	77,858,000	54	49	63	109	8	29	58	56
Dec. 31 -----	76,636,000	55	48	62	112	7	29	58	56

PRICES

The average values per ton of bituminous coal and lignite sold in 1890–1950 are listed in table 3, and those sold in 1905–51 are plotted in figure 2. The average values, classified according to method of mining, in 1914–51 are shown in table 21. The unit prices of railroad fuel and coking coal and the average retail price in 1950–51 are quoted in table 1. Figure 1 includes a graph of prices of railroad fuel in 1940–51. Lignite values are shown separately in table 53.

TABLE 52.—Average value per ton, f.o.b. mines, bituminous coal and lignite produced in the United States, 1950–51, by States 1/

State	1950			1951		
	Strip mines	Underground mines	Total all mines	Strip mines	Underground mines	Total all mines
Alabama	$5.60	$6.21	$6.13	$5.37	$6.18	$6.06
Alaska	6.99	7.53	7.35	6.61	8.51	7.62
Arizona	—	6.00	6.00	—	6.00	6.00
Arkansas	6.34	8.55	7.60	6.84	8.44	7.85
Colorado	4.52	5.15	5.09	4.36	5.24	5.16
Illinois	3.87	4.14	4.05	3.92	4.15	4.07
Indiana	3.88	4.08	3.97	3.93	4.19	4.04
Iowa	3.32	4.32	3.69	3.43	4.51	3.75
Kansas	3.83	4.82	3.87	3.90	4.94	3.94
Kentucky	3.96	5.24	5.01	3.89	5.08	4.89
Maryland	4.34	5.00	4.84	4.19	4.93	4.73
Michigan	—	10.12	10.12	—	10.19	10.19
Missouri	4.03	5.34	4.17	4.00	5.33	4.10
Montana:						
Bituminous	1.30	4.56	2.30	1.65	4.36	2.61
Lignite	3.00	3.44	3.37	3.00	3.63	3.51
Total Montana	1.31	4.50	2.33	1.65	4.34	2.63
New Mexico	—	5.39	5.39	—	5.75	5.75
North Dakota (lignite)	2.40	2.24	2.38	2.42	2.39	2.41
Ohio	3.42	4.41	3.81	3.51	4.33	3.87
Oklahoma	4.65	6.87	5.44	5.15	7.57	6.24
Oregon	—	6.08	6.08	—	—	—
Pennsylvania	4.06	5.32	5.00	4.02	5.64	5.29
Tennessee	4.87	5.47	5.40	4.55	5.03	4.99
Texas (lignite)	1.69	—	1.69	—	—	—
Utah	—	4.81	4.81	—	5.32	5.32
Virginia	4.97	5.54	5.49	4.73	5.47	5.42
Washington	6.12	6.72	6.67	7.19	7.02	7.04
West Virginia	4.30	5.33	5.23	4.23	5.32	5.23
Wyoming	2.82	4.08	3.79	3.15	4.61	4.19
Other States:						
California and South Dakota (lignite)	3.88	1.68	3.82	4.26	—	4.26
Georgia and North Carolina	—	6.74	6.74	—	6.71	6.71
Total	3.87	5.15	4.84	3.88	5.21	4.92

1/ Average gross realization, selling cost not deducted.

LIGNITE 4/

TABLE 53.--Summary of number of mines, production, value, employment, days operated, man-days of labor, output per man day, and detailed operations at underground and strip lignite mines in the United States, 1951, by States 1/

	California and South Dakota	Montana 2/	North Dakota	Texas	Total
Number of mines	3	6	54	---	63
Production (net tons):					
Shipped by rail 3/	---	---	2,513,656	---	2,513,656
Shipped by truck or wagon	28,325	34,901	446,104	---	509,330
Used at mines 4/	3,682	169	264,267	---	268,118
Total	32,007	35,070	3,224,027	---	3,291,104
Average value per ton	$4.26	$3.51	$2.41	---	$2.44
Average number of men working daily:					
Underground	---	17	110	---	127
Surface: In strip pits	16	4	301	---	321
All others	1	4	265	---	270
Total	17	25	676	---	718
Average number of days worked	205	190	238	---	235
Number of man-days worked	3,484	4,762	160,742	---	168,988
Average tons per man per day	9.19	7.36	20.06	---	19.48
Operations at underground mines:					
Number of mines	---	5	13	---	18
Shot off the solid--net tons	---	28,757	24,910	---	53,667
Cut by machines--net tons	---	---	225,991	---	225,991
Total--net tons	---	28,757	250,901	---	279,658
Number of cutting machines	---	---	4	---	4
Average output per machine--net tons	---	---	56,498	---	56,498
Percent of total underground production cut by machines	---	---	90.1	---	80.8
Average value per ton	---	$3.63	$2.39	---	$2.51
Average number of men working daily:					
Underground	---	17	110	---	127
All other	---	2	31	---	33
Total	---	19	141	---	160
Average number of days worked	---	206	235	---	232
Man-days of labor	---	3,922	33,142	---	37,064
Average tons per man per day	---	7.33	7.57	---	7.55
Operations at strip mines:					
Number of strip pits	3	1	41	---	45
Production at strip pits--net tons	32,007	6,313	2,973,126	---	3,011,446
Average value per ton	$4.26	$3.00	$2.42	---	$2.44
Number of shovels and dragline excavators	4	1	49	---	54
Average number of men working daily:					
In strip pits	16	4	301	---	321
All other	1	2	234	---	237
Total	17	6	535	---	558
Average number of days worked	205	140	239	---	236
Number of man-days worked	3,484	840	127,600	---	131,924
Average tons per man per day	9.19	7.52	23.30	---	22.83

1/Exclusive of small mines producing less than 1,000 tons.

2/Includes output from Custer, Dawson, Richland, Roosevelt, and Sheridan Counties.

3/Includes coal loaded at mine directly into railroad cars and hauled by truck to railroad siding.

4/Includes coal used by mine employes, taken by locomotive tenders at tipple, used at mine for power and heat, coal made into briquets and other uses.

4/Detailed data, by counties, shown in Table 45.

FOREIGN TRADE 5/

TABLE 54.- Bituminous coal 1/imported for consumption in the United States, 1949-51, by countries and customs districts, in net tons

(U. S. Department of Commerce)

Country	1949	1950	1951	Customs district	1949	1950	1951
North America:				Alaska	7,535	4,634	2,506
Canada	311,801	344,838	290,932	Chicago	6	1,687	52
Mexico	165	165	—	Dakota	1,438	1,655	1,185
South America: Brazil	—	53	441	Duluth and Superior	186	39	221
Europe:				Hawaii	8,831	--	310
France	—	1,650	—	Laredo	165	165	—
Germany	--	--	18	Los Angeles	--	53	441
Greece	13	--	145	Maine and New Hampshire	137,033	140,482	126,974
Italy	6	—	--	Maryland	—	--	18
United Kingdom	2,995	—	--	Michigan	538	3,354	74
				Mobile	2,995	—	--
Total	314,980	346,706	291,536	Montana and Idaho	143,926	164,973	157,500
				New York	144	—	612
				Philadelphia	--	3,145	--
				Vermont	115	4,255	49
				Washington	12,068	15,264	1,594
				Wisconsin	—	7,000	—
				Total	314,980	346,706	291,536

1/ Includes slack, culm, and lignite.

TABLE 55. - Exports of bituminous coal, by country groups, 1947-51, in thousands of net tons

(U. S. Department of Commerce)

Year	Canada (including Newfoundland) and Mexico	West Indies and Central America 1/	"Overseas" (all other countries)							Grand total
			Miquelon, Bermuda, and Greenland	South America	Europe	Asia	Africa	Oceania	Total "Overseas"	
1947	26,171	369	24	2,866	2/36,761	311	2,057	108	42,127	68,667
1948	26,000	214	4	1,867	16,093	765	961	26	19,716	45,930
1949	16,100	140	6	819	8,682	1,395	612	88	11,602	27,842
1950	23,010	108	1	1,303	794	147	105	—	2,350	25,468
1951	22,823	125	13	3,016	27,926	1,894	918	11	33,778	56,726

1/ Includes Bahamas and Panama.
2/ Excludes 102,179 tons ($1,010,820) exported to Austria as a part of the Army Civilian Supply Program.

5/ Figures on imports and exports compiled by M. B. Price and E. D. Page, of the Bureau of Mines, from records of the U. S. Department of Commerce.

TABLE 56.--Bituminous coal exported from the United States, 1947-51, by countries, in net tons 1/

(U. S. Department of Commerce)

Country	1947	1948	1949	1950	1951
North America:					
Bermuda	14,567	3,508	731	---	612
Canada	25,848,117	25,842,797	15,982,038	23,009,089	22,823,044
Newfoundland and Labrador	321,553	154,932	115,797		
Central America:					
British Honduras	30	4	45	50	20
Canal Zone	34,342	22,207	9,051	10,632	---
Costa Rica	50	3,177	42	41	100
El Salvador	128	86	176	110	75
Guatemala	257	230	140	337	190
Honduras	302	293	276	372	248
Nicaragua	8	---	---	6	16
Panama	35	45	20	50	30
Greenland	4,493	---	---	---	11,461
Mexico	694	1,593	1,617	767	907
Miquelon and St. Pierre	4,864	500	4,697	508	444
West Indies:					
British:					
Barbados	2,574	1,225	---	---	---
Jamaica	89,339	48,890	32,465	3,360	30,274
Leeward and Windward	14,800	---	---	---	11,060
Trinidad and Tobago	100,797	57,675	33,502	11,184	11,974
Other British	491	5	---	20	---
Cuba	98,277	76,471	55,907	73,021	64,808
Dominican Republic	7,309	625	106	99	177
French	20,448	1,910	9,330	8,940	5,467
Haiti	2	15	15	15	15
Netherlands Antilles	374	2,004	137	80	176
Total North America	26,563,851	26,218,192	16,246,092	23,118,681	22,961,098
South America:					
Argentina	1,113,734	826,750	30,625	97,343	1,632,480
Bolivia	329	511	15,288	11,101	2,810
Brazil	1,468,312	959,323	681,838	1,055,305	1,026,952
Chile	163,693	27,634	29,472	97,101	219,496
Surinam	2,570	3,875	2,510	3,008	2,590
Uruguay	117,135	48,705	58,628	39,168	128,370
Other South America	500	276	321	47	3,505
Total South America	2,866,273	1,867,074	818,682	1,303,073	3,016,203
Europe:					
Austria	2/122,391	58,447	---	---	929,356
Belgium-Luxembourg	3,363,800	630,604	---	50,352	1,495,110
Denmark	2,377,583	52,098	---	---	1,075,809
Finland	637,271	6,273	---	48,107	191,218
France	12,466,388	8,459,268	3,639,516	10,944	4,305,301
Germany	42,630	70,777	---	31,333	6,047,167
Gibraltar	156,872	---	---	21,743	170,587
Greece	34,056	62,830	---	---	---
Iceland	57,627	---	---	---	4,865
Ireland	1,005,584	8	---	10,827	681,679
Italy	8,780,259	4,696,415	3,912,139	114,578	5,085,519
Netherlands	2,691,248	770,761	310,961	33,629	3,368,526
Norway	738,735	---	---	5,643	991,523
Portugal	846,901	257,230	184,275	26,378	139,286
Sweden	2,074,092	587,322	437,012	140,882	942,039
Switzerland	683,400	420,621	186,655	195,975	1,062,053
United Kingdom	675,043	---	---	103,579	1,302,260
Other Europe	6,966	20,117	11,226	---	133,195
Total Europe	36,760,846	16,092,771	8,681,784	793,970	27,925,493
Asia:					
China	4,234	40,078	40,002	---	---
Hong Kong	92,203	---	---	---	---
Indochina	2,520	---	---	---	---
Indonesia	95,417	---	---	---	13,803
Israel-Jordan	3,436	---	---	---	---
Japan	---	688,776	1,355,102	147,218	1,569,080
Malaya	99,519	---	---	---	---
Pakistan	10	32,376	---	---	310,945
Syria	13,667	---	---	---	---
Other Asia	23	3,934	10	25	20
Total Asia	311,029	765,164	1,395,114	147,243	1,893,848
Africa:					
Algeria	1,052,370	556,686	265,576	68,211	401,592
Belgian Congo	14,151	---	---	---	32,242
British West Africa	36,425	---	---	---	---
Canary Islands	51,822	2,082	---	6,193	66,452
Cape Verde Islands	89,354	(3)	(3)	(3)	(3)
Egypt	298,135	27,596	---	3,557	106,212
French Cameroon	140	17,206	22,740	---	---
French Equatorial Africa	---	10,827	46,517	---	---
French Morocco	92,020	169,551	127,753	---	76,574
French West Africa	244,643	132,668	84,595	---	80,217
Libya	27,083	---	---	---	---
Madagascar	---	10,918	55,273	---	---
Madeira Islands	21,491	---	---	---	8,886
Spanish Africa, n.e.s.	114,311	22,481	---	---	---
Tunisia	14,531	---	9,291	27,470	107,823
Other Africa	935	10,725	6	5	38,318
Total Africa	2,057,411	960,740	611,751	105,436	918,316
Oceania	107,553	26,192	88,633	---	11,197
Grand Total	68,666,963	45,930,133	27,842,056	25,468,403	56,726,155

1/ Amounts stated do not include fuel or bunker coal loaded on vessels engaged in foreign trade, which aggregated 1,689,328 tons in 1947, 1,057,118 tons in 1948, 874,029 tons in 1949, 717,488 tons in 1950, and 908,269 tons in 1951.
2/ Exclusive of 103,179 tons exported to Austria as a part of the Army Civilian Supply Program.
3/ Beginning Jan. 1, 1948, not separately classified.

TABLE 57. – Bituminous coal exported from the United States, 1947-51, by customs districts, in net tons

(U. S. Department of Commerce)

Customs district	1947	1948	1949	1950	1951
North Atlantic:					
Maine and New Hampshire	57,408	5,586	6,276	4,208	3,629
Massachusetts	61	—	68	30	—
New York	1,382,037	23,788	7,196	1,294	4,169
Philadelphia	2,740,855	453,540	32,150	22,217	356,978
South Atlantic:					
Georgia	10,708	—	560	49	—
Maryland	10,871,709	3,471,674	1,336,249	337,153	3,861,883
South Carolina	1,825,197	768,520	54,450	—	646,454
Virginia	20,146,083	13,827,771	10,061,387	2,104,393	28,742,863
Gulf Coast:					
Florida	2,015,102	330,455	3,501	4,618	562
Galveston	463,494	—	—	—	—
Mobile	1,427,881	617,042	26,388	66,874	193,143
New Orleans	315,944	7,968	1,569	1,545	1,462
Sabine	731,418	—	—	—	10
Mexican border:					
Arizona	272	273	265	399	308
El Paso	45	1,138	1,317	211	488
Laredo	27	—	—	—	—
Pacific Coast:					
Los Angeles	142,522	100	—	—	10,065
Oregon	379,239	10,982	—	325	20,160
San Diego	83	125	10	157	77
San Francisco	20	69	115	62	830
Washington	301,035	134,461	37,929	6,112	118,800
Northern border:					
Buffalo	1,548,629	1,103,124	744,288	979,624	1,036,728
Chicago	1,505,335	1,633,134	711,818	442,569	925,479
Dakota	23,392	36,373	50,210	36,728	36,559
Duluth and Superior	385,036	340,995	204,062	207,212	350,332
Michigan	3,046,644	3,127,640	2,245,509	3,662,662	3,572,549
Montana and Idaho	4,431	723	1,284	614	1,637
Ohio	11,619,905	13,314,027	8,763,909	12,456,669	11,551,859
Rochester	3,829,918	3,465,712	1,798,570	3,068,678	3,160,056
St. Lawrence	3,677,266	2,815,519	1,473,762	2,062,946	2,126,249
Vermont	4,106	5,041	1,575	1,044	1,388
Wisconsin	193	—	—	—	200
Miscellaneous:					
Alaska	204	283	10	—	5
Colorado	3,037	—	—	—	—
Hawaii	3,282	—	—	—	40
Indiana	5	—	—	—	—
Minnesota	—	—	74	—	—
Pittsburgh	11,210	—	—	—	1,193
Puerto Rico	325	—	—	10	—
Total	1/68,666,963	1/45,930,133	1/27,842,056	25,468,403	56,726,155

1/ Includes 192,905 tons in 1947, 434,070 tons in 1948, and 277,555 tons in 1949, representing shipments on vessels operated by the United States Army or Navy. Excludes 102,179 tons exported to Austria in 1947 as a part of the Army Civilian Supply Program.

TABLE 58. – Shipments of bituminous coal to United States possessions, 1949-51

(U. S. Department of Commerce)

Territory	1949		1950		1951 1/	
	Net tons	Value	Net tons	Value	Net tons	Value
Puerto Rico	4,999	$48,366	6,007	$58,142	5,192	$47,346
Virgin Islands	20,601	196,211	19,473	174,883	—	—

1/ Data cover period January thru July.

WORLD PRODUCTION

World production of anthracite and bituminous coal amounted to 1,591 million metric tons in 1951 and of lignite to 324 million tons - a total of 1,915 million tons. Total coal output in 1951, including lignite, was 110 million metric tons over that of 1950. Of the total world coal output, 72 percent was produced in four countries - the United States, Russia, Germany, and the United Kingdom. The United States supplied 523 million metric tons (bituminous, anthracite, and lignite) or 27 percent of the world output in 1951.

Most coal-producing countries in Europe enjoyed increased production during 1951; however, consumption requirements of the principal coal-producing countries on the European Continent exceeded available supplies.

Although world production of anthracite, bituminous coal, and lignite increased in 1951 the European output was not adequate to meet requirements and production from the United States made up a large part of the deficit.

TABLE 59.--World production of bituminous coal, anthracite, and lignite, by countries, 1947-51, in thousands of metric tons 1/

Compiled by Pauline Roberts and Berenice R. Mitchell

Country 1/	1947	1948	1949	1950	1951
North America:					
Canada:					
Bituminous	12,971	15,296	15,648	15,364	14,845
Lignite	1,425	1,442	1,697	1,999	2,017
Greenland: Bituminous	6	7	9	7	8
Mexico: Bituminous	1,055	1,057	1,075	912	1,119
United States:					
Anthracite (Pennsylvania)	51,882	51,836	38,738	39,986	38,709
Bituminous	569,482	541,072	394,420	465,330	481,144
Lignite	2,607	2,799	2,805	3,057	2,986
South America:					
Argentina: Bituminous 2/	14	17	18	26	3/ 45
Brazil:					
Bituminous	1,999	2,025	2,129	1,959	1,950
Lignite					
Chile: Bituminous (marketable)	1,850	2,015	1,882	1,964	1,989
Colombia: Bituminous 3/	800	900	1,015	1,200	1,350
Peru: Bituminous and anthracite	215	189	170	196	3/ 235
Venezuela: Bituminous	3/ 15	21	24	25	28
Europe:					
Albania: Lignite 3/	20	16	16	16	(4)
Austria:					
Bituminous	178	181	183	183	196
Lignite	2,839	3,338	3,816	4,308	4,989
Belgium: Bituminous and anthracite	24,436	26,691	27,854	27,304	29,675
Bulgaria:					
Anthracite 3/	27	27	27	30	35
Bituminous	3/ 203	3/300	4,695	5,682	6,134
Lignite	4,043	3,544			
Czechoslovakia:					
Bituminous	16,216	17,746	17,003	18,456	17,900
Lignite	22,362	23,[illegible]89	26,526	27,506	31,000
Denmark: Lignite	2,800	2,347	1,600	770	1,582
France:					
Bituminous and anthracite	45,216	43,291	51,199	50,843	52,968
Lignite	2,093	1,838	1,845	1,686	2,004
Saar	10,541	12,567	14,262	15,091	16,128
Germany: 5/					
Bituminous and anthracite:					
East Germany	2,754	2,840	6/ 3,000	6/3,000	3/ 3,100
West Germany	72,528	88,416	104,808	110,756	118,920
Lignite:					
East Germany 3/	102,000	110,000	117,000	123,000	147,000
West Germany	58,728	64,860	72,064	75,840	83,124
Greece: Lignite	133	125	180	152	191
Hungary:					
Bituminous	1,059	1,238	1,380	1,400	1,600
Lignite	7,750	9,377	10,438	11,850	14,000
Ireland: Bituminous and anthracite	221	182	115	181	184
Italy:					
Bituminous and anthracite	1,362	972	1,104	1,030	1,167
Lignite	1,856	907	850	780	854
Netherlands:					
Bituminous	10,104	11,032	11,705	12,247	12,424
Lignite	474	279	205	194	249
Poland:					
Bituminous	59,130	70,262	74,081	78,001	81,900
Lignite	4,766	5,040	4,621	4,837	5,000
Portugal:					
Bituminous and anthracite	370	387	443	426	418
Lignite	108	103	111	95	83
Rumania:					
Bituminous and anthracite	163	2,631	187	3/ 300	3/300
Lignite	2,105		2,576	3/ 2,900	3/ 3,500
Spain:					
Bituminous and anthracite	10,606	10,627	10,832	11,118	11,553
Lignite	1,263	1,400	1,332	1,318	1,497
Svalbard (Spitsbergen):					
Bituminous	336	516	580	7/ 379	7/470
Sweden: Bituminous	416	374	317	309	272
Switzerland:					
Bituminous and anthracite	15	3/ 15	3/10	3/ 10	3/10
Lignite	12	---	---	---	---
U.S.S.R.:					
Bituminous and anthracite 3/	154,000	170,000	236,000	264,000	281,000
Lignite 3/	30,000	35,000			
United Kingdom:					
Great Britain: Bituminous and anthracite 8/	200,617	212,755	218,570	219,792	225,815
Northern Ireland:					
Bituminous	1	1	1	1	1
Lignite	(9)	(9)	---	---	---
Yugoslavia:					
Bituminous	1,062	972	1,275	1,154	992
Lignite	8,229	9,751	10,833	11,712	10,827

For footnotes see end of table.

TABLE 59.--World production of bituminous coal, anthracite, and lignite, by countries, 1947-51, in thousands of metric tons 1/ - Continued

Country 1/	1947	1948	1949	1950	1951
Asia:					
Afghanistan: Bituminous ------	5	6/ 15	5	9	13
China: Bituminous, anthracite, and lignite ---------------	18,700	18,000	16,000	37,000	43,250
India: Bituminous ------------	30,628	30,608	32,208	32,815	34,983
Indochina: Bituminous and anthracite ----------------	248	359	379	502	645
Indonesia: Bituminous --------	223	10/537	662	804	865
Iran: Bituminous 11/ ---------	188	3/ 150	170	3/ 200	3/ 200
Japan:					
Bituminous and anthracite -	27,235	33,720	37,968	38,461	43,320
Lignite ------------------	2,820	2,552	2,088	1,284	1,403
Korea:					
North Korea:					
Anthracite 3/ ----------	1,340	1,500	1,500	1,500	1,000
Lignite ----------------	3/ 1,616	(4)	(4)	(4)	(4)
South Korea:					
Anthracite -------------	475	799	1,039	586	3/ 600
Lignite ----------------	37	68	60	27	(4)
Malaya: Bituminous -----------	230	381	393	422	389
Pakistan: Bituminous ---------	358	245	337	444	513
Philippines: Bituminous ------	74	88	123	159	151
Taiwan (Formosa): Bituminous -	1,307	1,629	1,649	1,402	1,450
Turkey (marketable):					
Bituminous ----------------	2,623	2,669	2,705	2,824	2,988
Lignite -------------------	628	829	939	3/ 907	3/ 1,000
U.S.S.R.: Sakhalin, southern: Bituminous 12/ ------------	(4) (13)	(4) (13)	(4) (13)	(4) (13)	(4) (13)
Africa:					
Algeria: Bituminous and anthracite ----------------	206	226	265	258	257
Belgian Congo: Bituminous and anthracite ----------------	102	117	152	160	219
French Morocco: Anthracite ---	269	290	341	368	394
Madagascar: Bituminous -------	---	(4)	16	2	5
Mozambique: Bituminous -------	16	9	13	56	78
Nigeria: Bituminous ----------	589	618	559	593	559
Southern Rhodesia: Bituminous	1,508	1,695	1,918	2,128	2,300
Tunisia: Lignite -------------	76	71	47	41	8
Union of South Africa: Bituminous (marketable) ---	23,818	24,017	25,496	26,473	26,632
Oceania:					
Australia:					
Bituminous ----------------	15,069	15,018	14,332	16,795	17,891
Lignite -------------------	6,239	6,800	7,494	7,445	7,962
New Zealand:					
Bituminous and anthracite -	951	968	952	936	689
Lignite -------------------	1,845	1,853	1,907	1,777	1,786
Total all grades -------	1,654,000	1,719,000	1,654,000	1,805,000	1,915,000
Lignite (total of items shown above) -----------------------	269,000	290,000	273,000	284,000	324,000
Bituminous coal and anthracite (by subtraction) -------------	1,385,000	1,429,000	1,381,000	1,521,000	1,591,000

1/ Coal is also mined in British Borneo, Faroe Islands, and Italian East Africa (formerly, but production figures are not available and no estimate is included in total.

2/ In addition, the following quantities (metric tons) of asphaltite were produced and used as solid fuels: 1947, 80,900; 1948, 82,289; 1949, 79,477; 1950 and 1951, data not available.

3/ Estimate.

4/ Data not available; estimate included in total.

5/ Does not include production of the Saar.

6/ Planned production.

7/ Norwegian mines only.

8/ Includes open-cast coal as follows, in thousands of tons: 1947, 10,410; 1948, 11,937; 1949, 12,639; 1950, 12,380; 1951, 11,148.

9/ Production less than 500 tons.

10/ Excludes production of Ombilin mines in Sumatra.

11/ Fiscal year ended Mar. 20 of year following that stated.

12/ Formerly Karafuto.

13/ Output from U.S.S.R. in Asia included with U.S.S.R. in Europe.

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MINERAL MARKET REPORT
NO. MMS 2103

PENNSYLVANIA ANTHRACITE 1951 1/

Production of Pennsylvania anthracite in 1951 totaled 42,669,997 net tons. This production was obtained from deep mines, strip pits, culm banks, and the streams draining the anthracite region. The output of small independent producers, many of whom were formerly classed as "bootleg" operators and a small tonnage from Sullivan County is also included. The 1951 output represented a decline of 3 percent from 1950. As exports to countries other than Canada increased from 93,284 tons in 1950 to 2,474,375 tons in 1951 and exports to Canada were down by only 8 percent, the decline in production was due largely to decreased demand in American markets. Anthracite is primarily a space-heating fuel, and weather conditions, therefore, are an important factor in the quantity of fuel consumed; however, as average temperatures in 1951 in the principal anthracite-consuming markets were about the same as in 1950, it can be assumed that natural gas and fuel oil continued to make some inroads into the anthracite market during the year.

According to statistics of the Department of Mines, Commonwealth of Pennsylvania, the New England and Middle Atlantic States received 80 percent of total anthracite shipments during 1951, other States 6 percent; 9 percent was shipped to Canada, and 5 percent to all other countries.

The percentages of anthracite produced by the various types of mining showed some changes from the 1950 pattern, as the proportion produced by culm bank recovery increased while underground and strip pit output declined. Underground operations produced 62 percent of the 1951 total; strip pits, 26 percent; culm banks, 11 percent; and dredges 1 percent. The average number of men employed in the industry decreased 5 percent from the 1950 figure but productivity increased slightly, principally as a result of the relative increase in culm-bank output. The decline in production resulted in short working time at many operations, hence the average number of days worked in the industry was also lower than in 1950.

In 1951, 41 percent of the underground production was loaded mechanically, compared with 44 percent in 1950. Measured quantitatively, the tonnage loaded mechanically represented a decrease of 12 percent from 1950. The coal seams of the Northern field being relatively flat and hence more adaptable to machine loading, accounted for 86 percent of the coal loaded mechanically, whereas the other fields with sharply pitching beds accounted for only 14 percent. Of the total strip-pit production, 58 percent was obtained in the Schuylkill region, 24 percent in the Wyoming region, and 18 percent in the Lehigh region. The relatively high rate of production in the Schuylkill region is due to the outcropping of many thick, highly pitched seams.

1/ This report contains tables showing final statistics of the Pennsylvania anthracite industry for 1951. The complete report to be released as a chapter of Minerals Yearbook 1951, will be distributed to the regular mailing list.

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J. A. Corgan, Chief; Coal Branch, T. W. Hunter, Chief.

Table 1 - Salient statistics of Pennsylvania anthracite industry, 1947-51

	1947	1948	1949	1950	1951
Production:					
Loaded at mines for shipment:					
Breakers------net tons--	1/48,073,153	47,816,627	35,653,628	37,658,864	36,204,268
Washeries------do-----	1/2,009,233	1,725,124	1,380,115	882,541	923,610
Dredges------do-----	970,027	941,441	655,753	486,739	379,460
Sold to local trade and used by employees------net tons--	4,232,871	4,795,721	3,848,420	3,930,889	4,125,495
Used at collieries for power and heat net tons--	1,904,725	1,861,035	1,163,808	1,115,670	1,037,164
Total production------do-----	57,190,009	57,139,948	42,701,724	44,076,703	42,669,997
Value at breaker, washery, or dredge------	$413,019,486	$467,051,800	$358,008,451	$392,398,006	$405,817,963
Average sales realization per net ton on breaker shipments:					
Domestic------	$9.82	$11.05	$11.39	$11.94	$13.19
Steam------	$4.32	$4.90	$5.05	$5.25	$5.48
Total all sizes------	$7.65	$8.67	$8.90	$9.34	$9.94
Percent in total breaker shipments:					
Total domestic------	60.4	61.3	60.6	61.1	57.8
Total steam------	39.6	38.7	39.4	38.9	42.2
Producers' stocks 2/------net tons--	702,109	963,839	975,457	1,268,300	982,396
Exports 3/------do-----	8,509,995	6,675,914	4,942,670	3,891,569	5,959,175
Imports 3/------do-----	10,350	945	------------	18,289	26,812
Consumption (apparent)------do-----	48,200,000	50,200,000	37,700,000	39,900,000	37,000,000
Average number of days worked------	259	265	195	211	208
Average number of men employed------	78,600	76,215	75,377	72,624	68,995
Output per man per day------net tons--	2.78	2.81	2.87	2.83	2.97
Output per man per year------do-----	720	745	560	597	618
Quantity cut by machines------do-----	1,209,983	1,016,757	557,599	611,734	496,085
Quantity mined by stripping------do-----	12,603,545	13,352,874	10,376,808	11,833,934	11,135,990
Quantity loaded by machines underground------net tons--	16,054,011	15,742,368	11,858,088	12,335,650	10,847,787
Distribution:					
Total receipts in New England 4/ - net tons--	4,737,946	4,862,834	3,445,543	3,677,738	3,174,473
Exports to Canada 3/------do-----	4,470,034	4,931,918	3,580,568	3,798,285	3,484,800
Loaded into vessels at Lake Erie 5/ - do-----	936,040	1,125,050	611,888	611,409	460,776
Receipts at Duluth-Superior 6/------do-----	446,605	538,992	271,854	7/297,814	149,776

1/ Small quantity of washery coal included with "Breakers."
2/ Anthracite Committee
3/ U. S. Department of Commerce.
4/ Commonwealth of Massachusetts, Division on the Necessaries of Life; and Association of American Railroads.
5/ Ore and Coal Exchange, Cleveland, Ohio.
6/ U. S. Engineer, Duluth, Minnesota.
7/ Revised.

TABLE 2. - Statistical summary of monthly developments in the Pennsylvania anthracite industry in 1951

[All tonnage figures represent net tons]

	January	February	March	April	May	June	July	August	September	October	November	December	Year 1951	Change from 1950 (percent)	Year 1950
Production (including mine fuel, local sales, and dredge coal)	4,316,000	3,621,000	2,244,000	2,675,000	3,723,000	3,848,000	2,847,000	3,612,000	3,267,000	4,675,000	4,129,000	3,713,000	42,670,000	-3.2	44,077,000
Shipments (breakers and washeries only, all sizes):															
By rail 1/	3,296,112	2,591,249	1,694,164	2,181,675	2,993,141	3,200,769	2,459,078	3,076,630	2,798,655	3,597,464	3,193,912	2,771,121	33,853,970	-4.9	35,583,128
By truck 2/	748,886	678,371	534,370	414,363	456,736	413,452	259,890	398,198	403,066	616,714	683,881	703,899	6,311,826	-8.3	6,880,685
Carloadings 3/	65,872	53,136	33,645	41,182	58,180	61,974	48,292	60,789	52,893	68,576	61,265	53,764	659,568	-5.6	698,631
Distribution:															
Lake Erie loadings 4/	----------	----------	----------	59,741	59,022	68,464	70,907	51,389	47,621	51,366	52,266	----------	460,776	-24.6	611,409
Lake Ontario loadings 5/	----------	----------	----------	9,871	15,222	----------	6,834	9,404	5,255	10,486	1,156	----------	58,228	-65.1	166,811
Receipts at Duluth-Superior 6/	----------	----------	----------	16,015	28,849	21,987	15,074	14,647	7,229	6,291	39,684	----------	149,776	-49.7	297,814
Upper Lake dock trade: 7/															
Receipts from lower-Lake docks:															
Lake Superior	----------	----------	----------	16,015	28,859	22,174	15,073	14,647	22,687	6,291	38,196	1,525	165,467	-47.4	314,692
Lake Michigan	1,952	2,972	4,135	44,407	38,120	41,316	56,403	57,360	17,476	27,104	42,608	4,135	337,988	-10.8	379,008
Reloadings for final delivery:															
Lake Superior	25,280	19,929	11,111	2,329	6,168	7,801	11,668	16,922	33,519	34,864	27,774	20,632	217,997	-26.6	296,905
Lake Michigan	36,241	37,683	27,744	13,328	17,072	27,541	22,379	26,112	24,453	37,305	31,738	26,838	328,434	-15.8	389,857
New England receipts;															
Tide-water 3/	3,275	1,682	892	11,573	3,429	5,844	2,750	839	1,037	4,632	268	2,902	39,123	-37.6	62,700
Rail 8/	338,388	268,070	166,772	150,843	270,269	268,093	241,849	310,124	213,828	300,310	313,492	293,309	3,135,350	-13.3	3,615,038
Exports 9/	374,389	323,230	197,117	226,805	413,838	475,131	526,289	605,128	705,921	891,695	636,612	583,020	5,959,175	+53.1	3,891,569
Imports 9/	5,363	----------	----------	----------	4,991	----------	----------	2,877	4,956	5,855	2,770	----------	26,812	+46.6	18,289
Industrial consumption and stocks:															
Railroads (class 1 only): 3/															
Consumption	83,979	74,704	76,105	55,050	45,415	41,070	38,533	41,540	40,770	48,081	62,550	70,432	678,229	-12.1	771,888
Stocks at end of month	65,939	59,592	53,430	51,994	46,746	53,333	45,412	47,689	52,067	54,656	48,986	49,097	49,097	-19.6	61,081
Electric utilities 10/															
Consumption	330,779	291,212	317,697	299,357	329,450	331,825	307,696	330,264	314,064	347,370	333,966	335,832	3,869,512	+7.2	3,608,863
Stocks at end of month	4,693,955	4,682,189	4,663,495	4,705,503	4,826,797	4,924,946	4,976,659	5,046,997	5,092,108	5,156,564	5,277,605	5,125,369	5,125,369	+8.6	4,720,147
Stocks on Upper Lake docks at end of month: 7/															
Lake Superior	93,823	73,994	62,436	76,151	98,771	113,114	116,519	114,503	103,718	74,851	85,263	65,501	65,501	-45.0	119,078
Lake Michigan	88,844	54,133	30,522	61,299	82,347	96,087	130,111	161,359	154,382	144,181	155,051	132,289	132,289	+7.4	123,159
Stocks in retail dealer yards 11/	3,271,000	2,781,000	2,180,000	2,265,000	2,700,000	2,714,000	2,741,000	2,824,000	2,792,000	2,947,000	2,960,000	2,694,000	2,694,000	-22.0	3,452,000
Producers' stocks 12/	1,068,323	815,416	739,895	732,343	746,786	791,541	876,824	1,005,328	1,144,626	1,161,223	1,055,138	982,396	982,396	-22.5	1,268,300
Sales of mechanical stokers: 9/															
Class 1 (capacity under 61 lb. of coal per hour)	357	267	212	210	276	364	257	532	510	603	458	222	4,268	+1.8	4,191
Class 2 (capacity 61 to 100 lb. of coal per hour)	55	53	20	9	16	26	29	39	43	54	29	41	414	-15.0	487
Wholesale price indices (1926=100): 13/															
On tracks, destination:															
Chestnut	143.3	155.1	154.7	151.0	149.0	150.6	151.6	153.2	155.4	155.4	155.7	156.0	152.6	+10.0	138.7
Pea	159.3	168.6	167.8	164.8	163.4	164.9	165.9	166.9	169.3	169.3	169.7	169.7	166.7	+6.6	156.4
Employee wages and hours: 13/															
Average weekly earnings	$71.33	$66.65	$50.68	$47.20	$66.67	$68.94	$79.50	$58.52	$60.36	$78.24	$81.84	$69.98	$66.60	+5.3	$63.24
Average hourly earnings	$1.987	$2.207	$2.194	$2.185	$2.215	$2.224	$2.252	$2.225	$2.219	$2.229	$2.224	$2.250	$2.198	+11.6	$1.970
Average number hours worked per week	35.9	30.2	23.1	21.6	30.1	31.0	35.3	26.3	27.2	35.1	36.8	31.1	30.3	-5.6	32.1

1/ Furnished by Anthracite Institute.

2/ Pennsylvania Department of Mines.

3/ Association of American Railroads

4/ Ore and Coal Exchange, Cleveland, Ohio.

5/ Buffalo Branch, Ore and Coal Exchange, Cleveland, Ohio.

6/ U. S. Engineer Office, Duluth, Minnesota

7/ Includes all commercial docks on Lake Superior and west shoreof Lake Michigan as far south as Kenosha. Based on data courteously supplied by Maher Coal Bureau and direct reports to the Bureau of Mines.

8/ Furnished by Commonwealth of Massachusetts, Division of the Necessaries of Life.

9/ U. S. Department of Commerce.

10/ Federal Power Commission.

11/ Estimated from monthly reports submitted by a select list of retail dealers.

12/ Anthracite Committee. Represents coal in storage nearest available date to the end of the month.

13/ Bureau of Labor Statistics.

Table 3 --Statistical trends in the Pennsylvania anthracite industry, 1890-1951 1/

Year	Production (Net tons)	Value of production	Average value per net ton	Exports 2/ (Net tons)	Imports 2/ (Net tons)	Apparent Consumption 3/ (Net tons)	Average number of employees	Average number of days worked	Average tons per man per day	Average tons per man per year	Quantity cut by machines 4/ (Net tons)	Quantity produced by stripping 5/ (Net tons)	Quantity loaded mechanically underground 6/ (Net tons)
1890	46,468,641	$66,383,772	$1.43	889,655	16,962	45,596,000	126,000	200	1.85	369	—	—	—
1891	50,665,431	73,944,735	1.46	964,601	42,120	49,743,000	126,350	203	1.98	401	—	—	—
1892	52,472,504	82,442,000	1.57	953,836	72,865	51,592,000	129,050	198	2.06	407	—	—	—
1893	53,967,543	85,687,078	1.59	1,493,281	60,220	52,534,000	132,944	197	2.06	406	—	—	—
1894	51,921,121	78,488,063	1.51	1,613,500	100,876	50,408,000	131,603	190	2.08	395	—	—	—
1895	57,999,337	82,019,272	1.41	1,647,195	158,297	56,510,000	142,917	196	2.07	406	—	—	—
1896	54,346,081	81,748,651	1.50	1,512,000	113,892	52,948,000	148,991	174	2.10	365	—	—	—
1897	52,611,681	79,301,954	1.51	1,454,620	27,478	51,185,000	149,884	150	2.34	351	—	—	—
1898	53,382,645	75,414,537	1.41	1,513,062	3,527	51,873,000	145,504	152	2.41	367	—	—	—
1899	60,418,005	88,142,130	1.46	1,912,732	68	58,505,000	139,608	173	2.50	433	—	—	—
1900	57,367,915	85,757,851	1.49	1,853,163	132	55,515,000	144,206	166	2.40	398	—	—	—
1901	67,471,667	112,504,020	1.67	2,232,504	320	65,239,000	145,309	196	2.37	464	—	—	—
1902	41,373,595	76,173,586	1.84	1,016,934	190,636	40,547,000	148,141	116	2.40	279	—	—	—
1903	74,607,068	152,036,448	2.04	2,249,920	196,837	72,554,000	150,483	206	2.41	496	—	—	—
1904	73,156,709	138,974,020	1.90	2,495,799	81,232	70,742,000	155,861	200	2.35	469	—	—	—
1905	77,659,850	141,879,000	1.83	2,497,581	38,350	75,201,000	165,406	215	2.18	470	—	—	—
1906	71,282,411	131,917,694	1.85	2,483,005	36,236	68,836,000	162,355	195	2.25	439	—	—	—
1907	85,604,312	163,584,056	1.91	3,021,841	11,085	82,594,000	167,234	220	2.33	512	—	—	—
1908	83,268,754	158,178,849	1.90	3,082,641	18,462	80,205,000	174,174	200	2.39	478	—	—	—
1909	81,070,359	149,181,587	1.84	3,183,840	3,574	77,890,000	7/ 171,195	205	8/ 2.31	8/ 474	—	—	—
1910	84,485,236	160,275,302	1.90	3,384,222	9,180	81,110,000	169,497	229	2.17	498	—	—	—
1911	90,464,067	175,189,392	1.94	3,980,479	2,759	86,486,000	172,585	246	2.13	524	69,907	—	—
1912	84,361,598	177,622,626	2.11	4,131,444	1,870	80,232,000	174,030	231	2.10	485	246,216	—	—
1913	91,524,922	195,181,127	2.13	4,652,912	1,004	85,474,000	175,745	257	2.02	520	555,776	—	—
1914	90,821,507	188,181,399	2.07	4,289,873	17,696	84,041,000	179,679	245	2.06	505	916,596	—	—
1915	88,995,061	184,653,498	2.07	3,965,255	814	88,144,000	176,552	230	2.19	504	1,307,756	1,121,603	—
1916	87,578,493	202,009,561	2.31	4,665,530	6,000	87,118,000	159,869	253	2.16	548	1,839,506	1,987,800	—
1917	99,611,811	283,650,723	2.85	6,007,306	13,000	94,068,000	154,174	285	2.27	646	1,955,223	2,301,588	—
1918	98,826,084	336,480,347	3.40	4,967,808	37,272	92,775,000	147,121	293	2.29	672	1,857,514	2,360,183	—
1919	88,092,201	364,926,950	4.14	4,976,598	82,818	81,518,000	154,571	266	2.14	570	1,575,205	2,006,879	—
1920	89,598,249	434,252,198	4.85	5,403,749	31,748	85,786,000	145,074	271	2.28	618	938,073	2,054,441	—
1921	90,473,451	452,304,903	5.00	4,677,368	8,894	81,950,000	159,499	271	2.09	567	979,145	2,027,790	—
1922	54,683,022	273,700,125	5.01	2,649,457	233,528	56,799,000	156,849	151	2.31	349	502,793	949,745	—
1923	93,339,009	506,786,768	5.43	5,090,138	300,360	86,914,000	157,743	268	2.21	592	1,208,542	2,263,098	—
1924	87,926,862	477,230,852	5.43	4,017,785	117,951	80,717,000	160,009	274	2.00	550	1,423,884	1,865,677	—
1925	61,817,149	327,664,512	5.30	3,179,006	382,894	64,061,000	160,312	182	2.12	386	941,189	1,578,478	—
1926	84,437,452	474,164,252	5.62	4,029,683	813,956	77,221,000	165,386	244	2.09	511	931,650	2,401,356	—
1927	80,095,564	420,941,726	5.26	3,325,507	119,030	74,672,000	165,259	225	2.15	485	1,171,888	2,153,156	7/ 2,223,281
1928	75,348,069	393,637,690	5.22	3,336,272	384,707	73,650,000	160,681	217	2.17	469	1,289,809	2,422,924	7/ 2,351,074
1929	73,828,195	385,642,751	5.22	3,406,369	487,172	71,457,000	151,501	225	2.16	487	1,159,910	1,911,766	3,470,158
1930	69,384,837	354,574,191	5.11	2,551,659	674,812	67,628,000	150,804	208	2.21	460	1,410,123	2,536,288	4,467,750
1931	59,645,652	296,354,586	4.97	1,778,308	637,951	58,408,000	139,431	181	2.37	428	1,587,265	3,813,237	4,384,780
1932	49,855,221	222,375,129	4.46	1,303,355	607,097	50,500,000	121,243	162	2.54	411	1,674,223	3,980,973	5,433,340
1933	49,541,344	206,718,405	4.17	1,034,562	456,252	49,600,000	104,633	182	2.60	473	1,648,249	4,932,069	6,557,267
1934	57,168,291	244,152,245	4.27	1,297,610	478,118	55,500,000	109,050	207	2.53	524	1,981,088	5,798,138	9,284,486
1935	52,158,783	210,130,565	4.03	1,608,549	571,439	51,100,000	103,269	189	2.68	505	1,848,095	5,187,072	9,279,057
1936	54,579,535	227,003,538	4.16	1,678,024	614,639	53,200,000	102,081	192	2.79	535	2,162,744	6,203,267	10,827,946
1937	51,856,433	197,598,849	3.81	1,914,173	395,737	50,400,000	99,085	189	2.77	523	1,984,512	5,696,018	10,683,837
1938	46,099,027	180,600,167	3.92	1,908,911	362,895	45,200,000	96,417	171	2.79	478	1,588,407	5,095,341	10,151,669
1939	51,487,377	187,175,324	3.64	2,590,000	298,153	49,700,000	93,138	183	3.02	553	1,881,884	5,486,479	11,773,833
1940	51,484,640	205,489,814	3.99	2,667,632	135,436	49,000,000	91,313	186	3.02	562	1,816,483	6,352,700	12,326,000
1941	9/ 56,368,267	240,275,126	4.26	3,380,189	74,669	52,700,000	88,054	203	10/ 3.04	10/ 617	1,855,422	7,316,574	13,441,987
1942	9/ 60,327,729	271,673,380	4.50	4,438,588	140,115	56,500,000	82,121	239	10/ 2.95	10/ 705	2,285,640	9,070,933	14,741,459
1943	9/ 60,643,620	306,816,018	5.06	4,138,680	166,020	57,100,000	79,153	270	10/ 2.78	10/ 751	1,624,883	8,989,387	14,745,793
1944	9/ 63,701,363	354,582,884	5.57	4,185,933	11,847	59,400,000	77,591	292	10/ 2.79	10/ 815	1,336,082	10,953,030	14,975,146
1945	9/ 54,933,909	323,944,435	5.90	3,691,247	149	51,600,000	72,842	269	10/ 2.79	10/ 751	1,210,171	10,056,325	13,927,955
1946	9/ 60,506,873	413,417,070	6.83	6,497,245	9,556	53,900,000	78,145	271	10/ 2.84	10/ 770	1,232,828	12,858,930	15,619,162
1947	9/ 57,190,009	413,019,486	7.22	8,509,995	10,350	48,200,000	78,600	259	10/ 2.78	10/ 720	1,209,983	12,603,545	16,054,011
1948	9/ 57,139,948	467,051,800	8.17	6,675,914	945	50,200,000	76,215	265	10/ 2.81	10/ 745	1,016,757	13,352,874	15,742,368
1949	9/ 42,701,724	358,008,451	8.38	4,942,670	----------	37,700,000	75,377	195	10/ 2.87	10/ 560	557,599	10,376,808	11,858,088
1950	9/ 44,076,703	392,398,006	8.90	3,891,569	18,289	39,900,000	72,624	211	10/ 2.83	10/ 597	611,734	11,833,934	12,335,650
1951	42,669,997	405,817,963	9.51	5,959,175	26,812	37,000,000	68,995	208	2.97	618	496,085	11,135,990	10,847,787

1/ "Bootleg" operations not included except as indicated in footnote 9.
2/ U. S. Department of Commerce.
3/ Prior to 1913 the figures of consumption take no account of producers' stocks, there being no data available for this item.
4/ Data first collected in 1911.
5/ Data first collected in 1915.
6/ Data first collected in 1929.
7/ As reported by the Commonwealth of Pennsylvania, Department of Mines.
8/ Calculated on basis of Pennsylvania Department of Mines employment data.
9/ Includes some "bootleg" coal purchased by legitimate operators and prepared at their breakers.
10/ Output per man per day calculated on legitimate tonnages only; "bootleg" purchases excluded.

TABLE 4.--Pennsylvania anthracite shipped outside producing region, sold locally, and used as colliery fuel in 1951, by regions

Region and type of plant	Shipments outside region		Local Sales		Colliery fuel		Total	
	Net tons	Value 1/	Net tons	Value	Net tons	Value	Net tons	Value 1/
Lehigh:								
Breakers------------	5,867,294	$57,782,420	406,366	$ 4,326,206	155,339	$ 1,058,406	6,428,999	$63,167,032
Washeries-----------	274,404	837,410	----------	----------	----------	----------	274,404	837,410
Dredges-------------	25,344	67,573	----------	----------	----------	----------	25,344	67,573
Total Lehigh------	6,167,042	58,687,403	406,366	4,326,206	155,339	1,058,406	6,728,747	64,072,015
Schuylkill:								
Breakers------------	15,905,112	140,296,101	1,158,593	9,867,928	187,614	542,162	17,251,319	150,706,191
Washeries-----------	533,434	1,729,290	2,820	15,025	937	1,575	537,191	1,745,890
Dredges-------------	354,116	1,061,484	175,108	431,769	----------	----------	529,224	1,493,253
Total Schuylkill--	16,792,662	143,086,875	1,336,521	10,314,722	188,551	543,737	18,317,734	153,945.334
Wyoming:								
Breakers------------	14,412,847	161,471,354	2,260,396	22,483,502	693,274	2,924,405	17,366,517	186,879,261
Washeries-----------	115,772	358,738	105,465	300,166	----------	----------	221,237	658,904
Dredges-------------	----------	----------	7,000	15,750	----------	----------	7,000	15,750
Total Wyoming-----	14,528,619	161,830,092	2,372,861	22,799,418	693,274	2,924,405	17,594,754	187,553,915
Total, excluding Sullivan County:								
Breakers-------------	36,185,253	359,549,875	3,825,355	36,677,636	1,036,227	4,524,973	41,046,835	400,752,484
Washeries------------	923,610	2,925,438	108,285	315,191	937	1,575	1,032,832	3,242,204
Dredges--------------	379,460	1,129,057	182,108	447,519	----------	----------	561,568	1,576,576
Total--------------	37,488,323	363,604,370	4,115,748	37,440,346	1,037,164	4,526,548	42,641,235	405,571,264
Sullivan County:								
Breakers-------------	19,015	151,974	9,747	94,725	----------	----------	28,762	246,699
Grand total:								
1951------------	37,507,338	363,756,344	4,125,495	37,535,071	1,037,164	4,526,548	42,669,997	405,817,963
1950------------	39,030,144	355,763,579	3,930,889	32,548,520	1,115,670	4,085,907	44,076,703	392,398,006
Percent change-----	-3.9	+2.2	+5.0	+15.3	-7.0	+10.8	-3.2	+3.4

1/ Value given for shipments is value at which coal left possession of producing company and does not include margins of separately incorporated sales companies.

TABLE 5.--Pennsylvania anthracite produced in 1951, classified as fresh-mined, culm bank, and river coal, and as breaker, washery, and dredge product, by fields, in net tons

Field and type of plant	From mines			From culm banks	From river dredging	Total
	Underground		Strip pits			
	Mechanically loaded	Hand loaded				
Eastern Middle:						
Breakers	347,686	1,338,293	1,270,088	107,064	------	3,063,131
Washeries	---------	---------	---------	243,744	------	243,744
Total Eastern Middle	347,686	1,338,293	1,270,088	350,808	------	3,306,875
Western Middle:						
Breakers	727,573	4,608,729	4,508,941	2,526,144	------	12,371,387
Washeries	---------	---------	---------	11,709	------	11,709
Dredges	---------	---------	---------	---------	122,732	122,732
Total Western Middle	727,573	4,608,729	4,508,941	2,537,853	122,732	12,505,828
Southern:						
Breakers	401,797	4,444,425	2,698,973	700,605	------	8,245,800
Washeries	---------	---------	---------	556,142	------	556,142
Dredges	---------	---------	---------	---------	431,836	431,836
Total Southern	401,797	4,444,425	2,698,973	1,256,747	431,836	9,233,778
Northern:						
Breakers	9,370,731	5,074,243	2,657,988	263,555	------	17,366,517
Washeries	---------	---------	---------	221,237	------	221,237
Dredges	---------	---------	---------	---------	7,000	7,000
Total Northern	9,370,731	5,074,243	2,657,988	484,792	7,000	17,594,754
Total, excluding Sullivan County:						
Breakers	10,847,787	15,465,690	11,135,990	3,597,368	------	41,046,835
Washeries	---------	---------	---------	1,032,832	------	1,032,832
Dredges	---------	---------	---------	---------	561,568	561,568
Total	10,847,787	15,465,690	11,135,990	4,630,200	561,568	42,641,235
Sullivan County:						
Breakers	---------	28,762	---------	---------	------	28,762
Grand total	10,847,787	15,494,452	11,135,990	4,630,200	561,568	42,669,997

TABLE 6.--Pennsylvania anthracite produced in 1951, classified as fresh-mined, culm bank, and river coal, and as breaker, washery, and dredge product, by regions, in net tons.

Region and type of plant	From mines			From culm banks	From river dredging	Total
	Underground		Strip pits			
	Mechanically loaded	Hand loaded				
Lehigh:						
Breakers	347,686	3,740,257	2,048,847	292,209	---------	6,428,999
Washeries	---------	---------	---------	274,404	---------	274,404
Dredges	---------	---------	---------	---------	25,344	25,344
Total Lehigh	347,686	3,740,257	2,048,847	566,613	25,344	6,728,747
Schuylkill:						
Breakers	1,129,370	6,651,190	6,429,155	3,041,604	---------	17,251,319
Washeries	---------	---------	---------	537,191	---------	537,191
Dredges	---------	---------	---------	---------	529,224	529,224
Total Schuylkill	1,129,370	6,651,190	6,429,155	3,578,795	529,224	18,317,734
Wyoming:						
Breakers	9,370,731	5,074,243	2,657,988	263,555	---------	17,366,517
Washeries	---------	---------	---------	221,237	---------	221,237
Dredges	---------	---------	---------	---------	7,000	7,000
Total Wyoming	9,370,731	5,074,243	2,657,988	484,792	7,000	17,594,754
Total, excluding Sullivan County:						
Breakers	10,847,787	15,465,690	11,135,990	3,597,368	---------	41,046,835
Washeries	---------	---------	---------	1,032,832	---------	1,032,832
Dredges	---------	---------	---------	---------	561,568	561,568
Total	10,847,787	15,465,690	11,135,990	4,630,200	561,568	42,641,235
Sullivan County:						
Breakers	---------	28,762	---------	---------	---------	28,762
Grand total	10,847,787	15,494,452	11,135,990	4,630,200	561,568	42,669,997

TABLE 7. - Pennsylvania anthracite produced, 1947-51, by fields, in net tons

[The figures of breaker product include a certain quantity of culm-bank coal, which amounted to 3,597,368 tons in 1951]

Field	1947	1948	1949	1950	1951
Eastern Middle:					
Breakers	4,270,240	4,467,628	3,379,672	3,094,587	3,063,131
Washeries	315,014	298,601	238,532	195,387	243,744
Total Eastern Middle	4,585,254	4,766,229	3,618,204	3,289,974	3,306,875
Western Middle:					
Breakers	12,147,528	12,405,178	9,636,954	10,755,416	12,371,387
Washeries	591,652	240,157	135,670	....	11,709
Dredges	411,804	311,183	246,905	197,812	122,732
Total Western Middle	13,150,984	12,956,518	10,019,529	10,953,228	12,505,828
Southern:					
Breakers	11,643,971	11,622,538	8,776,671	8,660,440	8,245,800
Washeries	237,131	496,194	484,595	439,934	556,142
Dredges	796,174	664,350	603,217	406,002	431,836
Total Southern	12,677,276	12,783,082	9,864,483	9,506,376	9,233,778
Northern:					
Breakers	25,831,439	25,839,648	18,579,955	19,930,556	17,366,517
Washeries	890,368	719,676	584,463	354,129	221,237
Dredges	11,728	12,471	15,000	15,750	7,000
Total Northern	26,733,535	26,571,795	19,179,418	20,300,435	17,594,754
Total, excluding Sullivan County:					
Breakers	53,893,178	54,334,992	40,373,252	42,440,999	41,046,835
Washeries	2,034,165	1,754,628	1,443,260	989,450	1,032,832
Dredges	1,219,706	988,004	865,122	619,564	561,568
Total, excluding Sullivan County	57,147,049	57,077,624	42,681,634	44,050,013	42,641,235
Sullivan County:					
Breakers	1/ 42,960	62,324	20,090	26,690	28,762
Washeries	(1)	....	....	....	....
Total Sullivan County	42,960	62,324	20,090	26,690	28,762
Grand total	57,190,009	57,139,948	42,701,724	44,076,703	42,669,997

1/ Small quantity of washery coal included with breaker.

TABLE 8.--Pennsylvania anthracite produced in 1951, by counties

County	Shipments outside producing regions		Sold to local trade		Colliery fuel		Total production	
	Net tons	Value 1/	Net tons	Value	Net tons	Value	Net tons	Value 1/
Carbon	1,596,726	$15,215,874	32,657	$343,841	41,384	$362,793	1,670,767	$15,922,508
Columbia	747,833	8,007,648	39,237	307,883	16,525	48,289	803,595	8,363,820
Dauphin, Susquehanna, and Wayne	166,007	710,617	138,707	370,149	-----------	-----------	304,714	1,080,766
Lackawanna	4,449,718	48,578,221	959,905	9,786,763	324,159	1,274,195	5,733,782	59,639,179
Lancaster, Lebanon, Northampton, and Snyder 2/	250,870	697,177	15,476	50,361	-----------	-----------	266,346	747,538
Luzerne	12,354,973	135,832,285	1,658,101	15,632,151	447,454	2,051,318	14,460,528	153,515,754
Northumberland	5,241,481	42,745,403	461,789	3,556,467	39,013	96,367	5,742,283	46,398,237
Schuylkill	12,680,715	111,817,145	809,876	7,392,731	168,629	693,586	13,659,220	119,903,462
Sullivan	19,015	151,974	9,747	94,725	-----------	-----------	28,762	246,699
Total	37,507,338	363,756,344	4,125,495	37,535,071	1,037,164	4,526,548	42,669,997	405,817,963

1/ Value given for shipments is value at which coal left possession of producing company and does not include margins of separately incorporated sales companies.

2/ Counties producing dredge coal only.

TABLE 9. - Pennsylvania anthracite shipped in 1951, by regions and sizes

Size	Breaker shipments 1/								
	Lehigh region			Schuylkill region			Wyoming region		
	Outside region	Local sales	Total	Outside region	Local sales	Total	Outside region	Local sales	Total
NET TONS									
Lump 2/ and Broken	58,451	121	58,572	66,415	2,052	68,467	133,954	25,946	159,900
Egg	216,262	385	216,647	575,005	1,991	576,996	561,206	3,394	564,600
Stove	1,180,495	14,116	1,194,611	2,570,145	93,654	2,663,799	4,010,622	85,456	4,096,078
Chestnut	1,314,497	99,050	1,413,547	3,123,385	232,842	3,356,227	4,411,323	406,609	4,817,932
Pea	452,098	135,557	587,655	1,270,559	247,469	1,518,028	956,497	758,763	1,715,260
Total domestic	3,221,803	249,229	3,471,032	7,605,509	578,008	8,183,517	10,073,602	1,280,168	11,353,770
Buckwheat No. 1	771,995	65,600	837,595	2,241,908	145,738	2,387,646	1,880,411	429,982	2,310,393
Buckwheat No. 2 (Rice)	470,811	73,073	543,884	1,422,230	105,286	1,527,516	946,335	275,346	1,221,681
Buckwheat No. 3 (Barley)	544,461	18,464	562,925	2,093,482	94,595	2,188,077	1,104,942	210,253	1,315,195
Buckwheat No. 4	430,009	----------	430,009	1,195,084	230,456	1,425,540	231,660	7,037	238,697
Other (including silt)	428,215	----------	428,215	1,346,899	4,510	1,351,409	175,897	57,610	233,507
Total steam	2,645,491	157,137	2,802,628	8,299,603	580,585	8,880,188	4,339,245	980,228	5,319,473
Grand total	5,867,294	406,366	6,273,660	15,905,112	1,158,593	17,063,705	14,412,847	2,260,396	16,673,243
VALUE									
Lump 2/ and Broken	$775,098	$1,620	$776,718	$884,081	$27,882	$911,963	$1,736,528	$331,948	$2,068,476
Egg	2,921,622	5,630	2,927,252	7,707,443	27,353	7,734,796	7,445,497	47,600	7,493,097
Stove	16,509,055	193,704	16,702,759	34,658,035	1,242,606	35,900,641	55,300,437	1,217,866	56,518,303
Chestnut	18,346,734	1,432,646	19,779,380	41,585,503	3,133,139	44,718,642	60,069,825	5,787,397	65,857,222
Pea	4,931,255	1,563,915	6,495,170	12,708,928	2,560,133	15,269,061	10,159,748	8,584,700	18,744,448
Total domestic	43,483,764	3,197,515	46,681,279	97,543,990	6,991,113	104,535,103	134,712,035	15,969,511	150,681,546
Buckwheat No. 1	5,931,028	538,245	6,469,273	16,542,529	1,088,838	17,631,367	14,202,185	3,492,153	17,694,338
Buckwheat No. 2 (Rice)	2,850,264	493,192	3,343,456	8,203,383	587,522	8,790,905	5,713,173	1,775,228	7,488,401
Buckwheat No. 3 (Barley)	2,584,156	97,254	2,681,410	9,580,888	419,399	10,000,287	5,403,901	1,080,996	6,484,897
Buckwheat No. 4	1,603,869	----------	1,603,869	4,098,054	770,611	4,868,665	912,518	28,083	940,601
Other (including silt)	1,329,339	----------	1,329,339	4,327,257	10,445	4,337,702	527,542	137,531	665,073
Total steam	14,298,656	1,128,691	15,427,347	42,752,111	2,876,815	45,628,926	26,759,319	6,513,991	33,273,310
Grand total	57,782,420	4,326,206	62,108,626	140,296,101	9,867,928	150,164,029	161,471,354	22,483,502	183,954,856
AVERAGE VALUE PER TON									
Lump 2/ and Broken	$13.26	$13.39	$13.26	$13.31	$13.59	$13.32	$12.96	$12.79	$12.94
Egg	13.51	14.62	13.51	13.40	13.74	13.41	13.27	14.02	13.27
Stove	13.98	13.72	13.98	13.48	13.27	13.48	13.79	14.25	13.80
Chestnut	13.96	14.46	13.99	13.31	13.46	13.32	13.62	14.23	13.67
Pea	10.91	11.54	11.05	10.00	10.35	10.06	10.62	11.31	10.93
Total domestic	13.50	12.83	13.45	12.83	12.10	12.77	13.37	12.47	13.27
Buckwheat No. 1	7.68	8.20	7.72	7.38	7.47	7.38	7.55	8.12	7.66
Buckwheat No. 2 (Rice)	6.05	6.75	6.15	5.77	5.58	5.76	6.04	6.45	6.13
Buckwheat No. 3 (Barley)	4.75	5.27	4.76	4.58	4.43	4.57	4.89	5.14	4.93
Buckwheat No. 4	3.73	----------	3.73	3.43	3.34	3.42	3.94	3.99	3.94
Other (including silt)	3.10	----------	3.10	3.21	2.32	3.21	3.00	2.39	2.85
Total steam	5.40	7.18	5.50	5.15	4.96	5.14	6.17	6.65	6.26
Grand total	9.85	10.65	9.90	8.82	8.52	8.80	11.20	9.95	11.03

See footnotes at end of table.

TABLE 9. - Pennsylvania anthracite shipped in 1951, by regions and sizes (Continued)

Size	Washery shipments			Dredge shipments			Grand total		
	Outside region	Local sales	Total	Outside region	Local sales	Total	Outside region	Local sales	Total
NET TONS									
Lump 2/ and Broken	----------	----------	----------	----------	----------	----------	258,820	28,119	286,939
Egg	----------	----------	----------	----------	----------	----------	1,352,473	5,770	1,358,243
Stove	----------	----------	----------	----------	----------	----------	7,763,138	194,476	7,957,614
Chestnut	445	590	1,035	----------	----------	----------	8,853,456	741,629	9,595,085
Pea	255	173	428	----------	250	250	2,682,345	1,145,148	3,827,493
Total domestic	700	763	1,463	----------	250	250	20,910,232	2,115,142	23,025,374
Buckwheat No. 1	8,898	80	8,978	135	518	653	4,905,723	642,936	5,548,659
Buckwheat No. 2 (Rice)	10,149	160	10,309	158	2,098	2,256	2,857,704	455,963	3,313,667
Buckwheat No. 3 (Barley)	78,560	50	78,610	71,023	15,023	86,046	3,892,468	338,385	4,230,853
Buckwheat No. 4	462,060	40,000	502,060	74,012	19,788	93,800	2,392,825	297,281	2,690,106
Other (including silt)	363,243	67,232	430,475	234,132	144,431	378,563	2,548,386	275,788	2,824,174
Total steam	922,910	107,522	1,030,432	379,460	181,858	561,318	16,597,106	2,010,353	18,607,459
Grand total	923,610	108,285	1,031,895	379,460	182,108	561,568	37,507,338	4,125,495	41,632,833
VALUE									
Lump 2/ and Broken	----------	----------	----------	----------	----------	----------	$3,395,707	$361,450	$3,757,157
Egg	----------	----------	----------	----------	----------	----------	18,074,562	80,583	18,155,145
Stove	----------	----------	----------	----------	----------	----------	106,491,090	2,669,884	109,160,974
Chestnut	$4,895	$6,490	$11,385	----------	----------	----------	120,056,975	10,393,017	130,449,992
Pea	2,295	1,557	3,852	----------	$1,750	$1,750	27,832,567	12,742,386	40,574,953
Total domestic	7,190	8,047	15,237	----------	1,750	1,750	275,850,901	26,247,320	302,098,221
Buckwheat No. 1	51,421	520	51,941	$1,006	2,674	3,680	36,745,717	5,129,951	41,875,668
Buckwheat No. 2 (Rice)	53,851	928	54,779	832	5,964	6,796	16,852,007	2,862,834	19,714,841
Buckwheat No. 3 (Barley)	361,676	230	361,906	242,295	41,875	284,170	18,172,916	1,639,754	19,812,670
Buckwheat No. 4	1,355,640	90,000	1,445,640	211,931	60,732	272,663	8,182,012	949,426	9,131,438
Other (including silt)	1,095,660	215,466	1,311,126	672,993	334,524	1,007,517	7,952,791	705,786	8,658,577
Total steam	2,918,248	307,144	3,225,392	1,129,057	445,769	1,574,826	87,905,443	11,287,751	99,193,194
Grand total	2,925,438	315,191	3,240,629	1,129,057	447,519	1,576,576	363,756,344	37,535,071	401,291,415
AVERAGE VALUE PER TON									
Lump 2/ and Broken	----------	----------	----------	----------	----------	----------	$13.12	$12.85	$13.09
Egg	----------	----------	----------	----------	----------	----------	13.36	13.97	13.37
Stove	----------	----------	----------	----------	----------	----------	13.72	13.73	13.72
Chestnut	$11.00	$11.00	$11.00	----------	----------	----------	13.56	14.01	13.60
Pea	9.00	9.00	9.00	----------	$7.00	$7.00	10.38	11.13	10.60
Total domestic	10.27	10.55	10.41	----------	7.00	7.00	13.19	12.41	13.12
Buckwheat No. 1	5.78	6.50	5.79	$7.45	5.16	5.64	7.49	7.98	7.55
Buckwheat No. 2 (Rice)	5.31	5.80	5.31	5.27	2.84	3.01	5.90	6.28	5.95
Buckwheat No. 3 (Barley)	4.60	4.60	4.60	3.41	2.79	3.30	4.67	4.85	4.68
Buckwheat No. 4	2.93	2.25	2.88	2.86	3.07	2.91	3.42	3.19	3.39
Other (including silt)	3.02	3.20	3.05	2.87	2.32	2.66	3.12	2.56	3.07
Total steam	3.16	2.86	3.13	2.98	2.45	2.81	5.30	5.61	5.33
Grand total	3.17	2.91	3.14	2.98	2.46	2.81	9.70	9.10	9.64

1/ Figures of shipments from breakers include some culm-bank coal handled in breakers.

2/ Quantity of Lump included is insignificant.

TABLE 9. - Pennsylvania anthracite shipped in 1951, by regions and sizes (Continued)

Size	Breaker shipments 1/ (Continued)								
	Sullivan County			Total					
				Excluding Sullivan County			Including Sullivan County		
	Outside region	Local sales	Total	Outside region	Local sales	Total	Outside region	Local sales	Total
NET TONS									
Lump 2/ and Broken --------	-----------	-----------	-----------	258,820	28,119	286,939	258,820	28,119	286,939
Egg ----------------------	-----------	-----------	-----------	1,352,473	5,770	1,358,243	1,352,473	5,770	1,358,243
Stove --------------------	1,876	1,250	3,126	7,761,262	193,226	7,954,488	7,763,138	194,476	7,957,614
Chestnut -----------------	3,806	2,538	6,344	8,849,205	738,501	9,587,706	8,853,011	741,039	9,594,050
Pea ----------------------	2,936	2,936	5,872	2,679,154	1,141,789	3,820,943	2,682,090	1,144,725	3,826,815
Total domestic -------	8,618	6,724	15,342	20,900,914	2,107,405	23,008,319	20,909,532	2,114,129	23,023,661
Buckwheat No. 1 -----------	2,376	1,018	3,394	4,894,314	641,320	5,535,634	4,896,690	642,338	5,539,028
Buckwheat No. 2 (Rice) ----	8,021	-----------	8,021	2,839,376	453,705	3,293,081	2,847,397	453,705	3,301,102
Buckwheat No. 3 (Barley) --	-----------	-----------	-----------	3,742,885	323,312	4,066,197	3,742,885	323,312	4,066,197
Buckwheat No. 4 -----------	-----------	-----------	-----------	1,856,753	237,493	2,094,246	1,856,753	237,493	2,094,246
Other (including silt) ----	-----------	2,005	2,005	1,951,011	62,120	2,013,131	1,951,011	64,125	2,015,136
Total steam ----------	10,397	3,023	13,420	15,284,339	1,717,950	17,002,289	15,294,736	1,720,973	17,015,709
Grand total ----------	19,015	9,747	28,762	36,185,253	3,825,355	40,010,608	36,204,268	3,835,102	40,039,370
VALUE									
Lump 2/ and Broken --------	-----------	-----------	-----------	$3,395,707	$361,450	$3,757,157	$3,395,707	$361,450	$3,757,157
Egg ----------------------	-----------	-----------	-----------	18,074,562	80,583	18,155,145	18,074,562	80,583	18,155,145
Stove --------------------	$23,563	$15,708	$39,271	106,467,527	2,654,176	109,121,703	106,491,090	2,669,884	109,160,974
Chestnut -----------------	50,018	33,345	83,363	120,002,062	10,353,182	130,355,244	120,052,080	10,386,527	130,438,607
Pea ----------------------	30,341	30,331	60,672	27,799,931	12,708,748	40,508,679	27,830,272	12,739,079	40,569,351
Total domestic -------	103,922	79,384	183,306	275,739,789	26,158,139	301,897,928	275,843,711	26,237,523	302,081,234
Buckwheat No. 1 -----------	17,548	7,521	25,069	36,675,742	5,119,236	41,794,978	36,693,290	5,126,757	41,820,047
Buckwheat No. 2 (Rice) ----	30,504	-----------	30,504	16,766,820	2,855,942	19,622,762	16,797,324	2,855,942	19,653,266
Buckwheat No. 3 (Barley) --	-----------	-----------	-----------	17,568,945	1,597,649	19,166,594	17,568,945	1,597,649	19,166,594
Buckwheat No. 4 -----------	-----------	-----------	-----------	6,614,441	798,694	7,413,135	6,614,441	798,694	7,413,135
Other (including silt) ----	-----------	7,820	7,820	6,184,138	147,976	6,332,114	6,184,138	155,796	6,339,934
Total steam ----------	48,052	15,341	63,393	83,810,086	10,519,497	94,329,583	83,858,138	10,534,838	94,392,976
Grand total ----------	151,974	94,725	246,699	359,549,875	36,677,636	396,227,511	359,701,849	36,772,361	396,474,210
AVERAGE VALUE PER TON									
Lump 2/ and Broken --------	-----------	-----------	-----------	$13.12	$12.85	$13.09	$13.12	$12.85	$13.09
Egg ----------------------	-----------	-----------	-----------	13.36	13.97	13.37	13.36	13.97	13.37
Stove --------------------	$12.56	$12.57	$12.56	13.72	13.74	13.72	13.72	13.73	13.72
Chestnut -----------------	13.14	13.14	13.14	13.56	14.02	13.60	13.56	14.02	13.60
Pea ----------------------	10.33	10.33	10.33	10.38	11.13	10.60	10.38	11.13	10.60
Total domestic	12.06	11.81	11.95	13.19	12.41	13.12	13.19	12.41	13.12
Buckwheat No. 1 -----------	7.39	7.39	7.39	7.49	7.98	7.55	7.49	7.98	7.55
Buckwheat No. 2 (Rice) ----	3.80	-----------	3.80	5.91	6.29	5.96	5.90	6.29	5.95
Buckwheat No. 3 (Barley) --	-----------	-----------	-----------	4.69	4.94	4.71	4.69	4.94	4.71
Buckwheat No. 4 -----------	-----------	-----------	-----------	3.56	3.36	3.54	3.56	3.36	3.54
Other (including silt) ----	-----------	3.90	3.90	3.17	2.38	3.15	3.17	2.43	3.15
Total steam ----------	4.62	5.07	4.72	5.48	6.12	5.55	5.48	6.12	5.55
Grand total ----------	7.99	9.72	8.58	9.94	9.59	9.90	9.94	9.59	9.90

See footnotes at end of table.

TABLE 10.--Estimated weekly production of Pennsylvania anthracite in 1951 1/

Week ended-	Thousands of net tons	Week ended-	Thousands of net tons	Week ended-	Thousands of net tons
Jan. 6	807	May 12	869	Sept. 15	806
13	979	19	804	22	856
20	983	26	881	29	963
27	1,001	June 2	755	Oct. 6	1,008
Feb. 3	883	9	811	13	1,049
10	890	16	900	20	1,074
17	915	23	925	27	1,116
24	959	30	1,014	Nov. 3	692
Mar. 3	712	July 7	102	10	945
10	544	14	712	17	1,021
17	424	21	835	24	865
24	530	28	885	Dec. 1	1,076
31	554	Aug. 4	758	8	953
Apr. 7	478	11	723	15	961
14	544	18	732	22	950
21	750	25	850	29	633
28	745	Sept. 1	896	31 2/	174
May 5	770	8	608	Total	42,670

1/ Estimated from weekly carloadings as reported by the Association of American Railroads. Adjusted to annual production total from Bureau of Mines canvass.

2/ Figures represent output of working days in that part of week included in the calendar year 1951.

TABLE 11.--Estimated monthly production of Pennsylvania anthracite, 1944-51
in thousands of net tons 1/

Month	1944	1945	1946	1947	1948	1949	1950	1951
January	4,970	4,219	4,968	5,172	4,929	3,725	2,893	4,316
February	5,811	4,471	4,774	4,254	4,682	2,930	2,563	3,621
March	5,512	5,269	5,476	4,984	4,935	2,375	4,847	2,244
April	5,141	5,124	5,069	4,293	4,445	3,725	3,331	2,675
May	5,781	2,083	5,453	4,564	4,874	4,407	4,228	3,723
June	5,558	5,667	3,625	4,624	4,597	3,406	4,166	3,848
July	4,905	4,944	5,248	4,098	4,372	3,925	2,855	2,847
August	5,558	4,656	5,428	5,011	5,129	3,710	4,386	3,612
September	5,380	4,640	5,033	5,158	5,015	2,114	3,835	3,267
October	5,538	5,304	5,393	5,524	4,969	4,979	4,282	4,675
November	5,029	4,559	4,975	4,629	4,687	4,657	3,355	4,129
December	4,518	3,998	5,065	4,879	4,506	2,749	3,336	3,713
Total	63,701	54,934	60,507	57,190	57,140	42,702	44,077	42,670

1/ Production is estimated from weekly carloadings as reported by the Association of American Railroads and includes mine fuel, coal sold locally, and dredge coal. Includes some "bootleg" coal purchased by legitimate operators and prepared at their breakers.

TABLE 12. - Culm-bank coal put through breakers, 1947-51, by fields, in net tons

Year	Northern	Eastern Middle	Western Middle	Southern	Total
1947	1/ 525,732	249,151	1,607,166	2,099,299	4,481,348
1948	393,787	152,827	1,871,847	1,571,119	3,989,580
1949	371,787	193,565	1,366,775	1,081,585	3,013,712
1950	2/ 213,577	35,270	1,388,760	840,253	2,477,860
1951	263,555	107,064	2,526,144	700,605	3,597,368

(1) Includes some washery coal.

(2) A small quantity of culm-bank coal was put through breakers in Sullivan County.

TABLE 13.--Rail shipments of Pennsylvania anthracite, 1948-51, by destinations, in net tons

(Pennsylvania Department of Mines)

Destination	1948	1949	1950	1951
New England States-----------	4,600,429	3,277,034	3,551,489	2,955,785
New York---------------------	14,526,250	10,804,020	10,589,197	9,095,169
New Jersey-------------------	6,213,667	4,522,749	4,613,659	4,140,095
Pennsylvania-----------------	9,706,429	6,935,710	6,740,610	6,026,258
Delaware---------------------	283,106	237,479	245,097	222,750
Maryland---------------------	626,948	396,561	431,546	397,129
District of Columbia---------	214,291	152,940	177,754	135,742
Virginia---------------------	118,611	84,275	73,809	75,982
Ohio-------------------------	118,735	50,673	94,022	85,303
Indiana----------------------	94,492	66,773	80,209	58,155
Illinois---------------------	286,888	152,791	211,366	207,291
Wisconsin--------------------	627,366	463,625	489,784	355,852
Minnesota--------------------	48,683	47,944	61,353	28,340
Michigan---------------------	351,304	235,703	249,088	171,315
Other States-----------------	57,070	57,148	86,213	144,861
Total United States-----	37,874,269	27,485,425	27,695,196	24,100,027
Canada-----------------------	3,977,698	3,154,387	3,620,573	3,199,775
Other foreign countries------	913,920	671,350	35,139	1,724,439
Grand total-------------	42,765,887	31,311,162	31,350,908	29,024,241

TABLE 14.--Truck shipments of Pennsylvania anthracite in 1951, by months and by States of destination, in net tons 1/

Destination	January	February	March	April	May	June	July
Pennsylvania:							
Within region-------	450,529	401,144	310,642	259,577	237,591	189,725	118,441
Outside region------	225,283	195,917	156,725	108,918	157,811	150,504	94,639
New York--------------	23,182	34,129	30,501	23,381	26,364	33,708	21,288
New Jersey------------	39,860	37,967	31,281	19,613	32,553	35,982	22,968
Delaware--------------	3,386	2,986	1,363	795	568	365	439
Maryland--------------	4,308	3,794	2,069	1,031	668	1,759	1,005
District of Columbia--	6	418	-----------	-----------	-----------	-----------	-----------
Other States----------	2,332	2,016	1,789	1,048	1,181	1,409	1,110
Total: 1951-----	748,886	678,371	534,370	414,363	456,736	413,452	259,890
1950-----	607,265	624,231	900,883	494,835	461,819	437,820	341,274

Destination	August	September	October	November	December	Total	Percent of total trucked
Pennsylvania:							
Within region-------	192,586	206,578	287,262	416,797	430,601	3,501,473	55.5
Outside region------	143,978	131,243	241,061	184,382	193,390	1,983,851	31.4
New York--------------	32,306	33,497	43,468	42,558	41,936	386,318	6.1
New Jersey------------	26,366	28,478	37,354	35,659	30,439	378,520	6.0
Delaware--------------	1,227	526	1,831	1,232	2,801	17,519	.3
Maryland--------------	555	1,291	3,394	2,138	3,177	25,189	.4
District of Columbia--	-----------	-----------	278	-----------	-----------	702	(2)
Other States----------	1,180	1,453	2,066	1,115	1,555	18,254	.3
Total: 1951-----	398,198	403,066	616,714	683,881	703,899	6,311,826	100.0
1950-----	607,973	525,753	575,161	565,991	737,680	6,880,685	100.0

1/ Compiled from reports of Pennsylvania Department of Mines. Does not include dredge coal.

2/ Less than 0.05 percent.

TABLE 15. - Sizes of Pennsylvania anthracite shipped from breakers, to points outside producing region, 1947-51, by regions, in percent of total
[Note that shipments of dredge and washery coal are not included]

Size	Percent of total shipments									
	Lehigh region					Schuylkill region				
	1947	1948	1949	1950	1951	1947	1948	1949	1950	1951
Lump 1/ and Broken	0.7	0.8	0.4	0.4	1.0	0.7	0.7	0.3	0.2	0.4
Egg	5.0	5.7	2.9	3.6	3.7	5.3	5.8	3.1	3.5	3.6
Stove	20.0	20.5	20.6	22.0	20.1	15.9	16.5	17.5	18.1	16.2
Chestnut	21.7	21.6	22.8	22.7	22.4	21.2	21.0	22.3	22.4	19.6
Pea	8.2	8.2	7.7	7.9	7.7	7.6	8.0	8.3	7.9	8.0
Total domestic	55.6	56.8	54.4	56.6	54.9	50.7	52.0	51.5	52.1	47.8
Buckwheat No. 1	13.5	13.0	13.1	13.5	13.2	14.1	14.0	14.2	14.6	14.1
Buckwheat No. 2 (Rice)	8.7	8.6	8.1	7.9	8.0	8.6	8.7	8.9	8.6	8.9
Buckwheat No. 3 (Barley)	10.1	9.3	9.7	9.8	9.3	14.6	14.4	12.6	11.9	13.2
Buckwheat No. 4	5.6	6.4	7.9	6.1	7.3	9.0	6.8	6.3	6.2	7.5
Other (including silt)	6.5	5.9	6.8	6.1	7.3	3.0	4.1	6.5	6.6	8.5
Total steam	44.4	43.2	45.6	43.4	45.1	49.3	48.0	48.5	47.9	52.2
All sizes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Size	Wyoming region					Sullivan County				
Lump 1/ and Broken	0.3	0.2	0.2	0.3	0.9	......	......	......	......	......
Egg	6.5	6.3	3.4	3.3	3.9	......	......	......	......	......
Stove	27.0	28.3	29.4	29.3	27.8	8.5	20.5	32.0	15.1	9.9
Chestnut	29.5	29.4	31.7	31.2	30.7	29.7	30.9	38.0	25.5	20.0
Pea	6.8	6.5	6.7	6.6	6.6	15.4	10.9	10.0	20.5	15.4
Total domestic	70.1	70.7	71.4	70.7	69.9	53.6	62.3	80.0	61.1	45.3
Buckwheat No. 1	13.1	12.7	13.4	13.3	13.0	10.2	8.0	2.1	16.4	12.5
Buckwheat No. 2 (Rice)	6.5	6.8	7.0	7.0	6.6	.6	......	......	......	42.2
Buckwheat No. 3 (Barley)	6.8	6.5	6.0	6.7	7.7	......	......	......	......	......
Buckwheat No. 4	1.7	1.4	1.1	1.2	1.6	......	......	......	......	......
Other (including silt)	1.8	1.9	1.1	1.1	1.2	35.6	29.7	17.9	22.5	......
Total steam	29.9	29.3	28.6	29.3	30.1	46.4	37.7	20.0	38.9	54.7
All sizes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Size	Total									
	Excluding Sullivan County					Including Sullivan County				
Lump 1/ and Broken	0.5	0.5	0.2	0.3	0.7	0.5	0.5	0.2	0.3	0.7
Egg	5.8	6.0	3.2	3.4	3.7	5.8	6.0	3.2	3.4	3.7
Stove	21.7	22.5	23.2	23.7	21.5	21.7	22.5	23.2	23.7	21.5
Chestnut	25.1	24.9	26.5	26.4	24.5	25.1	24.9	26.5	26.4	24.5
Pea	7.3	7.4	7.5	7.3	7.4	7.3	7.4	7.5	7.3	7.4
Total domestic	60.4	61.3	60.6	61.1	57.8	60.4	61.3	60.6	61.1	57.8
Buckwheat No. 1	13.5	13.3	13.7	13.8	13.5	13.5	13.3	13.7	13.8	13.5
Buckwheat No. 2 (Rice)	7.7	7.8	7.9	7.8	7.9	7.7	7.8	7.9	7.8	7.9
Buckwheat No. 3 (Barley)	10.3	9.9	9.2	9.3	10.3	10.2	9.9	9.2	9.3	10.3
Buckwheat No. 4	5.1	4.3	4.4	3.9	5.1	5.1	4.3	4.4	3.9	5.1
Other (including silt)	3.0	3.4	4.2	4.1	5.4	3.1	3.4	4.2	4.1	5.4
Total steam	39.6	38.7	39.4	38.9	42.2	39.6	38.7	39.4	38.9	42.2
All sizes	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Quantity of Lump included is insignificant.

TABLE 16. - Sizes of Pennsylvania anthracite shipped from breakers to points outside and inside anthracite-producing area in 1951, by regions, in percent of total

(Note that shipments of dredge and washery coal are not included)

Size	Percent of total shipments								
	Lehigh region			Schuylkill region			Wyoming region		
	Sold outside region	Local sales	Total	Sold outside region	Local sales	Total	Sold outside region	Local sales	Total
Lump 1/ and Broken	1.0	(2)	0.9	0.4	0.2	0.4	0.9	1.1	0.9
Egg	3.7	0.1	3.5	3.6	0.2	3.4	3.9	0.2	3.4
Stove	20.1	3.4	19.0	16.2	8.1	15.6	27.8	3.8	24.6
Chestnut	22.4	24.4	22.5	19.6	20.1	19.7	30.7	18.0	28.9
Pea	7.7	33.4	9.4	8.0	21.3	8.9	6.6	33.5	10.3
Total domestic	54.9	61.3	55.3	47.8	49.9	48.0	69.9	56.6	68.1
Buckwheat No. 1	13.2	16.1	13.4	14.1	12.6	14.0	13.0	19.0	13.9
Buckwheat No. 2 (Rice)	8.0	18.0	8.7	8.9	9.1	8.9	6.6	12.2	7.3
Buckwheat No. 3 (Barley)	9.3	4.6	9.0	13.2	8.1	12.8	7.7	9.3	7.9
Buckwheat No. 4	7.3	(2)	6.8	7.5	19.9	8.4	1.6	0.3	1.4
Other (including silt)	7.3	(2)	6.8	8.5	0.4	7.9	1.2	2.6	1.4
Total steam	45.1	38.7	44.7	52.2	50.1	52.0	30.1	43.4	31.9

Size	Sullivan County			Total					
				Excluding Sullivan County			Including Sullivan County		
Lump 1/ and Broken	-------	-------	-------	0.7	0.7	0.7	0.7	0.7	0.7
Egg	-------	-------	-------	3.7	0.2	3.4	3.7	0.2	3.4
Stove	9.9	12.8	10.9	21.5	5.1	19.9	21.5	5.1	19.9
Chestnut	20.0	26.1	22.0	24.5	19.3	24.0	24.5	19.3	24.0
Pea	15.4	30.1	20.4	7.4	29.8	9.5	7.4	29.8	9.5
Total domestic	45.3	69.0	53.3	57.8	55.1	57.5	57.8	55.1	57.5
Buckwheat No. 1	12.5	10.4	11.8	13.5	16.8	13.9	13.5	16.8	13.8
Buckwheat No. 2 (Rice)	42.2	-------	27.9	7.9	11.9	8.2	7.9	11.8	8.3
Buckwheat No. 3 (Barley)	-------	-------	-------	10.3	8.4	10.2	10.3	8.4	10.2
Buckwheat No. 4	-------	-------	-------	5.1	6.2	5.2	5.1	6.2	5.2
Other (including silt)	-------	20.6	7.0	5.4	1.6	5.0	5.4	1.7	5.0
Total steam	54.7	31.0	46.7	42.2	44.9	42.5	42.2	44.9	42.5

1/ Quantity of Lump included is insignificant.
2/ Less than 0.05 percent.

TABLE 17. - Average sales realization per net ton on Pennsylvania anthracite shipments from breakers to points outside anthracite producing region, 1947-51, by regions and sizes

[Value does not include margins of separately incorporated sales companies]

Size	Lehigh region					Schuylkill region				
	1947	1948	1949	1950	1951	1947	1948	1949	1950	1951
Lump 1/ and Broken	$10.21	$11.47	$11.98	$12.27	$13.26	$10.10	$11.09	$11.56	$12.14	$13.31
Egg	10.23	11.42	11.81	12.20	13.51	10.11	11.22	11.57	12.06	13.40
Stove	10.23	11.44	11.80	12.46	13.98	10.02	11.34	11.56	12.20	13.48
Chestnut	10.24	11.45	11.81	12.44	13.96	10.07	11.38	11.62	12.14	13.31
Pea	8.44	9.50	9.86	10.24	10.91	8.17	9.33	9.56	9.77	10.00
Total domestic	9.97	11.16	11.53	12.12	13.50	9.77	11.03	11.27	11.79	12.83
Buckwheat No. 1	5.97	6.52	6.64	6.90	7.68	5.76	6.39	6.43	6.64	7.38
Buckwheat No. 2 (Rice)	4.93	5.53	5.56	5.70	6.05	4.78	5.37	5.46	5.53	5.77
Buckwheat No. 3 (Barley)	3.57	4.14	4.36	4.50	4.75	3.52	4.03	4.26	4.37	4.58
Buckwheat No. 4	2.65	2.96	3.23	3.43	3.73	2.39	2.84	3.11	3.24	3.43
Other (including silt)	2.21	2.50	2.79	2.83	3.10	2.16	2.68	2.91	3.06	3.21
Total steam	4.25	4.73	4.80	5.08	5.40	4.09	4.68	4.79	4.94	5.15
Total all sizes	7.43	8.38	8.47	9.07	9.85	6.97	7.98	8.12	8.51	8.82
Size	Wyoming region					Sullivan County				
Lump 1/ and Broken	$9.87	$11.06	$11.66	$12.10	$12.96	------	------	------	------	------
Egg	10.01	11.15	11.54	12.03	13.27	------	------	------	------	------
Stove	9.98	11.24	11.61	12.21	13.79	$11.36	$9.67	$10.96	$11.74	$12.56
Chestnut	9.98	11.20	11.60	12.20	13.62	10.20	9.59	10.98	11.50	13.14
Pea	8.19	9.31	9.70	9.98	10.62	9.28	7.86	8.88	9.50	10.33
Total domestic	9.81	11.04	11.42	11.99	13.37	10.12	9.31	10.71	10.89	12.06
Buckwheat No. 1	5.81	6.50	6.63	6.83	7.55	3.98	5.99	5.00	6.25	7.39
Buckwheat No. 2 (Rice)	4.84	5.48	5.63	5.76	6.04	3.14	------	------	------	3.80
Buckwheat No. 3 (Barley)	3.63	4.15	4.37	4.58	4.89	------	------	------	------	------
Buckwheat No. 4	2.49	3.01	3.32	3.54	3.94	------	------	------	------	------
Other (including silt)	1.74	2.13	2.81	2.72	3.00	1.93	4.10	3.26	4.00	------
Total steam	4.67	5.30	5.63	5.77	6.17	2.39	4.50	3.44	4.95	4.62
Total all sizes	8.27	9.35	9.77	10.17	11.20	6.54	7.50	9.26	8.58	7.99
Size	Total									
	Excluding Sullivan County					Including Sullivan County				
Lump 1/ and Broken	$10.07	$11.19	$11.71	$12.15	$13.12	$10.07	$11.19	$11.71	$12.15	$13.12
Egg	10.08	11.22	11.60	12.07	13.36	10.08	11.22	11.60	12.07	13.36
Stove	10.03	11.30	11.63	12.25	13.72	10.03	11.29	11.63	12.25	13.72
Chestnut	10.05	11.30	11.64	12.21	13.56	10.05	11.29	11.64	12.21	13.56
Pea	8.23	9.36	9.67	9.94	10.38	8.23	9.35	9.67	9.94	10.38
Total domestic	9.82	11.05	11.39	11.94	13.19	9.82	11.05	11.39	11.94	13.19
Buckwheat No. 1	5.82	6.46	6.55	6.76	7.49	5.82	6.46	6.55	6.76	7.49
Buckwheat No. 2 (Rice)	4.83	5.45	5.54	5.65	5.91	4.83	5.45	5.54	5.65	5.90
Buckwheat No. 3 (Barley)	3.56	4.09	4.31	4.46	4.69	3.56	4.09	4.31	4.46	4.69
Buckwheat No. 4	2.46	2.89	3.18	3.33	3.56	2.46	2.89	3.18	3.33	3.56
Other (including silt)	2.06	2.49	2.87	2.96	3.17	2.06	2.50	2.87	2.97	3.17
Total steam	4.32	4.90	5.05	5.25	5.48	4.32	4.90	5.05	5.25	5.48
Total all sizes	7.65	8.67	8.90	9.34	9.94	7.65	8.67	8.90	9.34	9.94

1/ Quantity of Lump included is insignificant.

TABLE 18. - Average sales realization per net ton on Pennsylvania anthracite shipments from breakers to points outside and inside anthracite-producing area in 1951, by regions and sizes

[Value does not include margins of separately incorporated sales companies]

Size	Lehigh region			Schuylkill region			Wyoming region		
	Sold outside region	Local sales	Total	Sold outside region	Local sales	Total	Sold outside region	Local sales	Total
Lump 1/ and Broken	$13.26	$13.39	$13.26	$13.31	$13.59	$13.32	$12.96	$12.79	$12.94
Egg	13.51	14.62	13.51	13.40	13.74	13.41	13.27	14.02	13.27
Stove	13.98	13.72	13.98	13.48	13.27	13.48	13.79	14.25	13.80
Chestnut	13.96	14.46	13.99	13.31	13.46	13.32	13.62	14.23	13.67
Pea	10.91	11.54	11.05	10.00	10.35	10.06	10.62	11.31	10.93
Total domestic	13.50	12.83	13.45	12.83	12.10	12.77	13.37	12.47	13.27
Buckwheat No. 1	7.68	8.20	7.72	7.38	7.47	7.38	7.55	8.12	7.66
Buckwheat No. 2 (Rice)	6.05	6.75	6.15	5.77	5.58	5.76	6.04	6.45	6.13
Buckwheat No. 3 (Barley)	4.75	5.27	4.76	4.58	4.43	4.57	4.89	5.14	4.93
Buckwheat No. 4	3.73	------	3.73	3.43	3.34	3.42	3.94	3.99	3.94
Other (including silt)	3.10	------	3.10	3.21	2.32	3.21	3.00	2.39	2.85
Total steam	5.40	7.18	5.50	5.15	4.96	5.14	6.17	6.65	6.26
Total all sizes	9.85	10.65	9.90	8.82	8.52	8.80	11.20	9.95	11.03

Size	Sullivan County			Total					
				Excluding Sullivan County			Including Sullivan County		
Lump 1/ and Broken	--------	-------	-------	$13.12	$12.85	$13.09	$13.12	$12.85	$13.09
Egg	--------	-------	-------	13.36	13.97	13.37	13.36	13.97	13.37
Stove	$12.56	$12.57	$12.56	13.72	13.74	13.72	13.72	13.73	13.72
Chestnut	13.14	13.14	13.14	13.56	14.02	13.60	13.56	14.02	13.60
Pea	10.33	10.33	10.33	10.38	11.13	10.60	10.38	11.13	10.60
Total domestic	12.06	11.81	11.95	13.19	12.41	13.12	13.19	12.41	13.12
Buckwheat No. 1	7.39	7.39	7.39	7.49	7.98	7.55	7.49	7.98	7.55
Buckwheat No. 2 (Rice)	3.80	-------	3.80	5.91	6.29	5.96	5.90	6.29	5.95
Buckwheat No. 3 (Barley)	--------	-------	-------	4.69	4.94	4.71	4.69	4.94	4.71
Buckwheat No. 4	--------	-------	-------	3.56	3.36	3.54	3.56	3.36	3.54
Other (including silt)	-------	3.90	3.90	3.17	2.38	3.15	3.17	2.43	3.15
Total steam	4.62	5.07	4.72	5.48	6.12	5.55	5.48	6.12	5.55
Total all sizes	7.99	9.72	8.58	9.94	9.59	9.90	9.94	9.59	9.90

1/ Quantity of Lump included is insignificant.

TABLE 19. - Average value per ton of Pennsylvania anthracite shipments, local sales, colliery fuel, and total production, 1950-51, by regions 1/

[Values include washery and dredge coal]

Region	1950				1951			
	Shipments	Local sales	Coliery fuel	Total production	Shipments	Local sales	Colliery fuel	Total production
Lehigh	$8.82	$9.98	$6.52	$8.83	$9.52	$10.65	$6.81	$9.52
Schuylkill	8.20	6.77	2.47	8.05	8.52	7.72	2.88	8.40
Wyoming	10.06	8.63	3.38	9.63	11.14	9.61	4.22	10.66
Total, excluding Sullivan County	9.12	8.28	3.66	8.90	9.70	9.10	4.36	9.51
Sullivan County	8.58	8.65	--------	8.60	7.99	9.72	-------	8.58
Grand total	9.12	8.28	3.66	8.90	9.70	9.10	4.36	9.51

1/ Value given for shipments is value at which coal left possession of producing company and does not include margins of separately incorporated sales companies.

TABLE 20. - Apparent consumption of anthracite and selected competitive fuels in the principal anthracite markets, 1948-51

[Thousands of net tons]

Fuel	New England	New York	New Jersey	Pennsylvania	Delaware	Maryland	District of Columbia	Total	Percent of total fuels
Anthracite (all users):									
Pennsylvania: 1/									
1948	4,600	2/15,004	2/6,806	16,116	313	709	215	43,763	45.6
1949	3,277	2/11,191	2/4,896	12,194	255	429	153	32,395	40.0
1950	3,552	2/11,054	2/5,007	12,690	266	464	179	33,212	37.4
1951	2,956	2/9,482	2/4,519	11,512	240	422	136	29,267	33.0
Imported: 3/									
1948	--------	--------	--------	--------	--------	1	--------	1	(4)
1949	--------	--------	--------	--------	--------	--------	--------	--------	--------
1950	18	--------	--------	--------	--------	--------	--------	18	(4)
1951	27	--------	--------	--------	--------	--------	--------	27	(4)
Briquets (for domestic use): 5/									
Domestic origin:									
1948	59	44	26	88	1	24	3	245	.3
1949	25	21	21	39	(5)	15	1	122	.2
1950	36	23	13	39	(5)	22	3	136	.2
1951	42	17	25	27	(5)	17	2	130	.1
Imported: 3/									
1948	--------	--------	--------	--------	--------	--------	--------	--------	--------
1949	--------	--------	--------	--------	--------	--------	--------	(5)	(4)
1950	--------	--------	--------	--------	--------	--------	--------	(5)	(4)
1951	--------	--------	--------	--------	--------	--------	--------	(5)	(4)
Coke (for domestic use):									
Domestic origin: 6/									
1948	778	689	386	242	1	(5)	--------	2,096	2.2
1949	592	510	281	168	(5)	1	--------	1,552	1.9
1950	617	545	348	186	(5)	1	--------	1,697	1.9
1951	542	343	321	168	(5)	1	--------	1,375	1.6
Imported: 3/									
1948	1	38	--------	--------	--------	--------	--------	39	(4)
1949	1	83	--------	--------	--------	--------	--------	84	.1
1950	56	30	--------	--------	--------	--------	--------	86	.1
1951	(5)	9	--------	4	--------	--------	--------	13	(4)
Oil: Heating and range: 7/									
1948	18,652	14,390	8,224	5,207	278	2,256	776	49,783	51.9
1949	17,353	14,086	7,735	4,418	433	2,048	713	46,736	57.8
1950	19,807	15,877	8,558	5,686	476	2,454	783	53,641	60.4
1951	21,302	16,846	8,701	6,637	558	2,979	990	58,013	65.3
Total:									
1948	24,090	30,165	15,442	21,653	593	2,990	994	95,927	100.0
1949	21,248	25,891	12,933	16,819	688	2,493	867	80,939	100.0
1950	24,086	27,529	13,926	18,601	742	2,941	965	88,790	100.0
1951	24,869	26,697	13,566	18,348	798	3,419	1,128	88,825	100.0

1/ Pennsylvania Department of Mines; illicit coal not included.

2/ An important but undetermined part of anthracite shown as shipped to New Jersey is reshipped to New York City.

3/ U. S. Department of Commerce.

4/ Less than 0.05 percent.

5/ Less than 500 tons.

6/ Shipments to the States indicated.

7/ Converted to coal equivalent upon basis of 4 barrels of fuel oil equaling 1 ton of coal.

TABLE 21.--Men employed and days worked at operations producing Pennsylvania anthracite in 1951, by regions and type of plant
(Includes operations of strip contractors)

Region and type of plant	Average number of men employed								Average number of days plant operated	Man-days of labor	Average tons per man per day
	Underground			Surface				Grand total			
	Miners and their laborers	Other	Total underground	In strip pits	In preparation plants	Other	Total surface				
Lehigh:											
Breaker	4,573	2,814	7,387	1,445	855	1,615	3,915	11,302	199	2,254,728	2.85
Washery 1/	-----	-----	-----	-----	18	31	49	49	227	11,126	24.66
Dredge	-----	-----	-----	-----	2	4	6	6	204	1,224	20.71
Total Lehigh	4,573	2,814	7,387	1,445	875	1,650	3,970	11,357	200	2,267,078	2.97
Schuylkill:											
Breaker	7,798	3,798	11,596	4,663	2,249	3,747	10,659	22,255	209	4,656,212	3.71
Washery 1/	-----	-----	-----	-----	76	158	234	234	175	40,953	13.12
Dredge	-----	-----	-----	-----	85	132	217	217	209	45,247	11.70
Total Schuylkill	7,798	3,798	11,596	4,663	2,410	4,037	11,110	22,706	209	4,742,412	3.86
Wyoming:											
Breaker	17,037	9,408	26,445	1,539	1,600	5,181	8,320	34,765	211	7,320,394	2.37
Washery 1/	-----	-----	-----	-----	29	60	89	89	206	18,327	12.07
Dredge	-----	-----	-----	-----	3	3	6	6	145	870	8.05
Total Wyoming	17,037	9,408	26,445	1,539	1,632	5,244	8,415	34,860	211	7,339,591	2.40
Total, excluding Sullivan County:											
Breaker	29,408	16,020	45,428	7,647	4,704	10,543	22,894	68,322	208	14,231,334	2.88
Washery 1/	-----	-----	-----	-----	123	249	372	372	189	70,406	14.67
Dredge	-----	-----	-----	-----	90	139	229	229	207	47,341	11.86
Total	29,408	16,020	45,428	7,647	4,917	10,931	23,495	68,923	208	14,349,081	2.97
Sullivan County	40	15	55	-----	14	3	17	72	178	12,816	2.24
Grand total	29,448	16,035	45,483	7,647	4,931	10,934	23,512	68,995	208	14,361,897	2.97

1/ Represents washeries for which both production and employment were separately reported.

TABLE 22.--Men employed at operations producing Pennsylvania anthracite, 1950-51, by counties

(Includes operations of strip contractors)

County	1950	1951	County	1950	1951
Carbon	3,880	3,019	Luzerne	32,361	28,846
Columbia	1,685	1,286	Northumberland	5,569	6,140
Dauphin, Susquehanna, and Wayne 1/	92	167	Schuylkill	18,011	19,457
Lackawanna	10,771	9,886	Sullivan	93	72
Lancaster, Lebanon, Northampton, and Snyder 2/	162	122	Total	72,624	68,995

1/ None employed in Wayne in 1950.

2/ Counties producing dredge coal only.

TABLE 23. - Relative growth of Pennsylvania anthracite mined from strip pits, 1915, 1920, 1925, 1930, and 1946-51

	Net tons mined by stripping	Percent of fresh-mined total that was stripped	Number of men employed	Average number of days worked
1915	1,121,603	(1)	(1)	(1)
1920	2,054,441	2.5	(1)	(1)
1925	1,578,478	2.7	(1)	(1)
1930	2,536,288	3.7	(1)	(1)
1946	12,858,930	25.2	6,152	252
1947	12,603,545	25.4	7,264	242
1948	13,352,874	26.5	7,005	260
1949	10,376,808	27.7	7,386	198
1950	11,833,934	29.6	7,949	212
1951:				
Lehigh region	2,048,847	33.3	1,445	215
Schuylkill region	6,429,155	45.2	4,663	217
Wyoming region	2,657,988	15.5	1,539	237
Total 2/	11,135,990	29.7	7,647	220

1/ Data not available.
2/ No production by stripping in Sullivan County in 1951.

TABLE 24. - Power shovels and draglines used in stripping Pennsylvania anthracite, by type of power, 1949-51

Type of power	1949			1950			1951		
	Number of power shovels	Number of draglines	Total	Number of power shovels	Number of draglines	Total	Number of power shovels	Number of draglines	Total
Gasoline	66	20	86	53	11	64	47	7	54
Electric	53	45	98	48	47	95	55	50	105
Diesel	189	253	442	195	259	454	195	241	436
All other	1	....	1	.....	....	......	....	....	.....
Total	309	318	627	296	317	613	297	298	595

TABLE 25.--Pennsylvania anthracite produced by dredges, in 1951, by rivers (including tributaries)

River	Net tons	Value	
		Total	Average
Lehigh	25,344	$67,573	$2.67
Schuylkill	27,454	90,877	3.31
Susquehanna	508,770	1,418,126	2.79
Total	561,568	1,576,576	2.81

TABLE 26.--Pennsylvania anthracite loaded mechanically underground, 1950-51, by fields, in net tons

Field	Scraper loaders 1/		Pit-car loaders		Hand-loaded face conveyors, all types 2/		Total mechanically loaded underground	
	1950	1951	1950	1951	1950	1951	1950	1951
Northern-----------	1,759,602	1,552,784	58,285	33,735	8,927,716	7,784,212	10,745,603	9,370,731
Eastern Middle-----	52,662	13,574	55,950	53,442	303,246	280,670	411,858	347,686
Western Middle-----	158,026	163,272	19,909	4,423	661,625	559,878	839,560	727,573
Southern-----------	19,086	43,058	2,500	-----------	317,043	358,739	338,629	401,797
Total---------	1,989,376	1,772,688	136,644	91,600	10,209,630	8,983,499	12,335,650	10,847,787

1/ Includes mobile loaders.

2/ Shaker chutes, etc., including those equipped with duckbills.

TABLE 27.- Pennsylvania anthracite loaded mechanically underground, 1947-51

Year	Scrapers		Mobile loaders		Conveyors and pit-car loaders 1/		Total loaded mechanically	
	Number of units	Net tons loaded	Number of units	Net tons loaded	Number of units	Net tons loaded	Number of units	Net tons loaded
1947----------	594	2,371,370	25	132,237	3,457	13,550,404	4,076	16,054,011
1948----------	643	2,721,180	19	60,657	3,562	12,960,531	4,224	15,742,368
1949----------	589	1,950,503	27	80,104	3,618	9,827,481	4,234	11,858,088
1950----------	556	1,900,185	30	89,191	3,460	10,346,274	4,046	12,335,650
1951----------	528	1,693,656	43	79,032	3,282	9,075,099	3,853	10,847,787

1/ Includes duckbills and other self-loading conveyors.

TABLE 28.- Relative growth of mechanical loading, hand loading, and stripping in Pennsylvania anthracite mines, 1927-51

[Mechanical loading includes coal handled on pit-car loaders and hand-loaded face conveyors]

Year	Net tons			Index numbers: 1937=100		
	Mechanical loading underground	Stripping	Hand loading	Mechanical loading underground	Stripping	Hand loading
1927----------	1/2,223,281	2,153,156	71,434,537	20	38	224
1928----------	1/2,351,074	2,422,924	67,373,788	22	43	211
1929----------	3,470,158	1,911,766	66,493,690	32	34	209
1930----------	4,467,750	2,536,288	60,458,344	42	45	190
1931----------	4,384,780	3,813,237	49,074,722	41	67	154
1932----------	5,433,340	3,980,973	38,400,820	51	70	120
1933----------	6,557,267	4,932,069	34,474,844	61	87	108
1934----------	9,284,486	5,798,138	39,290,255	87	102	123
1935----------	9,279,057	5,187,072	34,503,819	87	91	108
1936----------	10,827,946	6,203,267	33,898,560	101	109	106
1937----------	10,683,837	5,696,018	31,882,514	100	100	100
1938----------	10,151,669	5,095,341	27,990,628	95	89	88
1939----------	11,773,833	5,486,479	30,797,715	110	96	97
1940----------	12,326,000	6,352,700	29,190,837	115	112	92
1941----------	13,441,987	7,316,574	30,435,277	126	128	95
1942----------	14,741,459	9,070,933	30,495,240	138	159	96
1943----------	14,745,793	8,989,387	27,990,005	138	158	88
1944----------	14,975,146	10,953,030	26,800,270	140	192	84
1945----------	13,927,955	10,056,325	20,957,744	130	177	66
1946----------	15,619,162	12,858,930	22,465,295	146	226	70
1947----------	16,054,011	12,603,545	20,909,101	150	221	66
1948----------	15,742,368	13,352,874	21,432,923	147	234	67
1949----------	11,858,088	10,376,808	15,172,562	111	182	48
1950----------	12,335,650	11,833,934	15,820,245	115	208	50
1951----------	10,847,787	11,135,990	15,494,452	102	196	49

1/ As reported by Commonwealth of Pennsylvania, Department of Mines.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

NOV 20 1952

OSCAR L. CHAPMAN, Secretary   J. J. FORBES, Director

For immediate release

Mineral Market Report
M. M. S. No. 2105

FOUNDRY CONSUMPTION OF BRASS INGOT 1951

Consumption of brass ingot reported by foundries was 19 percent greater in 1951 than in 1950, totaling 325,786 short tons compared with 273,433 tons, according to the Bureau of Mines, United States Department of the Interior. In addition to the 325,786 tons reported by the foundries, 8,657 tons were consumed by brass and wire mills and 2,077 tons were exported. Data on imports of brass ingot are not readily available. Brass ingot makers shipped 370,267 tons of brass ingot in 1951 and 343,959 tons in 1950. On the assumption that shipments equal domestic consumption plus exports, this consumption survey achieved 91 percent coverage in 1951 compared with 80 percent in 1950. Over 3,000 plants were canvassed both years.

In table 1 the ingot consumption has been classified under 9 general types, and by states, combined in 9 groups, according to the customary practice in the Minerals Yearbook. As in 1950, the geographic division containing Ohio and Illinois consumed more than any other group, 149,138 tons, and Ohio more than any other State, 55,437 tons. The division using the next largest total, 82,890 tons, was the Middle Atlantic, in which the New York metropolitan area lies. These two regions together consumed 71 percent of the total quantity used by foundries. Consumption of composition ingot, the largest item, amounted to 176,441 tons, or 54 percent of the total.

In table 2 consumption of the different types of ingot has been compared percentage-wise for the 4 years in which the survey has been conducted. The ratio of leaded red brass to total consumption dropped from .618 in 1950 to .543 in 1951, whereas ratios for all other items except the two smallest (hardeners and nickel silver) increased. Aggregate changes in the other years tabulated were smaller. The

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Prepared by Helena M. Meyer and Archie J. McDermid, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division. October 28, 1952.

Table 1.--FOUNDRY CONSUMPTION OF BRASS INGOT BY GEOGRAPHIC DIVISION AND STATES IN 1951,
In short tons

Geographic division and state	Tin bronze	Leaded tin bronze	Leaded red brass	High leaded tin bronze	Leaded yellow brass	Manganese bronze	Hard-eners	Nickel silver	Low brass	Total
New England:										
Connecticut..........	362	4,629	4,261	742	2,705	264	4	2	394	13,363
Maine................	34	13	107	108	8	103	35	-	22	430
Massachusetts........	712	3,225	6,100	752	441	606	13	31	214	12,094
New Hampshire........	3	28	779	108	687	82	-	42	8	1,737
Rhode Island.........	43	417	722	76	7	11	4	-	51	1,331
Vermont..............	4	-	97	-	29	-	1	-	-	131
Total................	1,158	8,312	12,066	1,786	3,877	1,066	57	75	689	29,036
Middle Atlantic:										
New Jersey...........	3,449	1,652	4,152	484	612	769	11	17	160	11,306
New York.............	2,140	5,686	12,231	3,460	395	2,878	151	348	575	27,864
Pennsylvania.........	3,345	5,465	23,216	2,168	1,671	4,329	1,634	373	1,519	43,720
Total................	8,934	12,803	39,599	6,112	2,678	7,976	1,796	738	2,254	82,890
East North Central:										
Illinois.............	1,827	4,871	26,710	1,295	403	1,665	335	205	1,627	38,938
Indiana..............	197	299	11,265	988	124	264	379	24	52	13,592
Michigan.............	389	5,975	14,368	1,046	1,630	834	889	6	157	25,294
Ohio.................	3,341	10,913	29,705	7,790	754	1,320	259	155	1,200	55,437
Wisconsin............	866	1,633	7,509	2,075	2,675	437	66	427	189	15,877
Total................	6,620	23,691	89,557	13,194	5,586	4,520	1,928	817	3,225	149,138
West North Central:										
Iowa.................	2	58	1,424	116	1,172	90	-	7	1	2,870
Kansas...............	79	4	135	-	244	21	1	-	-	484
Minnesota............	388	819	2,364	235	289	92	5	1	27	4,220
Missouri.............	691	674	2,792	562	1,189	100	73	1	325	6,407
Nebraska.............	1	181	391	27	-	3	5	-	-	608
Total................	1,161	1,736	7,106	940	2,894	306	84	9	353	14,589

Geographic division and state	Tin bronze	Leaded tin bronze	Leaded red brass	High leaded tin bronze	Leaded yellow brass	Manganese bronze	Hard-eners	Nickel silver	Low brass	Total
South Atlantic:										
Delaware	33	30	518	27	30	19	-	-	2	659
Florida	5	6	37	5	-	6	-	-	-	59
Georgia	11	395	106	-	-	-	-	-	1	513
Maryland and District of Columbia	113	404	757	118	-	46	9	136	97	1,680
North Carolina	2	-	45	23	222	1	1	-	-	294
South Carolina	36	37	5	4	-	14	-	-	-	96
Virginia	256	262	109	186	60	129	14	-	1	1,017
West Virginia	2	106	4,625	-	463	4	-	-	-	5,200
Total	458	1,240	6,202	363	775	219	24	136	101	9,518
East South Central:										
Alabama	68	462	4,432	132	648	508	4	25	167	6,446
Kentucky	5	232	591	13	5,259	1	27	2	4	6,134
Mississippi	14	-	7	5	-	-	-	-	-	26
Tennessee	30	733	920	718	47	194	4	-	-	2,646
Total	117	1,427	5,950	868	5,954	703	35	27	171	15,252
West South Central:										
Arkansas	2	-	21	-	-	-	-	-	-	23
Louisiana	21	11	82	22	-	12	-	-	1	149
Oklahoma	396	505	120	83	4	9	1	-	-	1,118
Texas	143	200	1,819	143	17	319	6	1	101	2,749
Total	562	716	2,042	248	21	340	7	1	102	4,039
Mountain:										
Colorado & New Mexico	107	159	177	21	6	46	1	-	4	521
Idaho	5	-	-	-	-	-	-	-	-	5
Montana	-	-	-	-	-	-	4	-	-	4
Utah	-	21	13	-	-	-	-	-	-	34
Total	112	180	190	21	6	46	5	-	4	564
Pacific:										
California	815	1,094	13,511	1,026	2,682	575	21	72	392	20,188
Oregon	22	14	28	-	12	2	-	-	-	78
Washington	47	73	190	1	1	117	15	-	-	444
Total	884	1,181	13,729	1,027	2,695	694	36	72	392	20,710
Grand Total	20,006	51,286	176,441	24,599	[illegible]	15,870	3,972	1,875	7,291	325,786

changes accompanied increased Government channeling of metals to military uses through orders of the National Production Authority.

The 1951 increases in consumption were more apparent than real. The reporting on consumption of brass ingot and other copper materials was made mandatory in 1951 after having been on voluntary basis for the period between World War II and the Korean conflict. The mandatory feature of the reports and the greater willingness of respondents to report were largely responsible for the increased tonnages of ingot consumption shown in 1951. Actual consumption of ingot by the foundries in 1951 probably increased about 8 percent, or the same as the increase in shipments of ingot by ingot makers.

Table 2. Comparison of brass ingot consumption
1948-1951

Type of ingot	Tin bronze	Leaded tin bronze	Leaded red brass	High leaded tin bronze	Leaded yellow brass	Manganese bronze	Hardeners	Nickel silver	Low brass	Total tons consumed
	Percent of totals									
1948	5.7	17.4	54.8	7.5	6.3	4.2	1.1	1.1	1.9	225,298
1949	5.6	15.2	57.9	6.1	7.2	4.3	1.0	.7	2.0	162,188
1950	4.4	15.0	61.8	4.6	6.9	3.7	1.3	.6	1.7	273,433
1951	6.1	15.7	54.3	7.5	7.5	4.9	1.2	.6	2.2	325.786

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

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MINERAL MARKET REPORT
MMS NO. 2106

PHOSPHATE ROCK INDUSTRY OF THE UNITED STATES IN 1951

General Conditions

Mine production of phosphate rock in the United States in 1951 (10,775,032 long tons) was approximately a third of a million tons less than the record high of 1950 (11,114,159 tons), according to reports submitted by producers to the Bureau of Mines, United States Department of the Interior. Decreases were shown in Florida and Tennessee; an increase of 9 percent was recorded, however, in the Western States total. Total stocks in producers' hands decreased.

Sales increased, rising from 10,253,552 long tons in 1950 to 11,095,204 tons in 1951, part of which came from stocks. Large increases in sales occurred in Florida and the Western States, while those of Tennessee rock increased only slightly. The total value of the phosphate rock sold or used in 1951 rose to $66,158,078, a little more than seven million dollars above the 1950 level. The P_2O_5 content of the rock sold or used in 1951 increased to 3,569,651 long tons from 3,336,112 tons in 1950. This is a new record high. The upward trend in the marketed production of Florida phosphate rock continued in 1951, reaching a total of 8,496,831 long tons. By far the greatest part of the production came from the land-pebble field, with relatively small quantities of hard rock and soft rock (waste-pond phosphates from the hard-rock field) being produced. The sales of the latter kind were somewhat larger than those of the hard-rock phosphate. Tennessee remains the second-largest phosphate-rock-producing State. The total marketed production of the Western States rose from 783,209 long tons in 1950 to 1,178,481 tons in 1951. Phosphate rock was produced and sold in all four States of the western field in 1951 - Idaho, Montana, Utah, and Wyoming. Idaho led in sales, with Montana second, and Wyoming third.

Imports increased both in quantity and value in 1951. Exports in 1951, as reported by producers to the Bureau of Mines, were below 1950 in quantity, but above in value. Apparent domestic consumption of phosphate rock rose to a record high of 9,507,951 long tons.

Prepared by Bertrand L. Johnson and G. E. Tucker, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division. October 1952.

Salient statistics of the phosphate-rock industry in the United States, 1950-51

	1950				1951			
	Long tons		Value at mines		Long tons		Value at mines	
	Rock	P_2O_5 content	Total	Average	Rock	P_2O_5 content	Total	Average
Production (mined)----------	11,114,159	3,565,793	(1/)	(1/)	10,775,032	3,405,791	(1/)	(1/)
Sold or used by producers:								
Florida:								
Land pebble-------------	7,933,009	2,673,882	$44,430,646	$ 5.60	8,329,033	2,800,135	$49,185,072	$ 5.91
Soft rock---------------	81,542	16,994	408,595	5.01	92,183	18,694	495,243	5.37
Hard rock---------------	71,319	25,133	538,601	7.55	75,615	26,647	582,247	7.70
Total Florida------	8,085,870	2,716,009	45,377,842	5.61	8,496,831	2,845,476	50,262,562	5.92
Tennessee----------------	1,384,473	390,190	10,028,404	7.24	1,419,892	391,518	10,604,638	7.47
Western States:								
Idaho------------------	573,044	163,272	2,125,065	3.71	694,446	184,610	1,748,074	2.52
Utah-------------------					580	180	2,900	5.00
Wyoming----------------					178,948	57,059	1,186,523	6.63
Montana----------------	210,165	66,641	1,496,537	7.12	304,507	90,808	2,353,381	7.73
Total Western States	783,209	229,913	3,621,602	4.62	1,178,481	332,657	5,290,878	4.49
Total United States	10,253,552	3,336,112	59,027,848	5.76	11,095,204	3,569,651	66,158,078	5.96
Imports 2/ -----------------	87,173	(1/)	1,113,974	12.78	89,823	(1/)	1,379,767	15.36
Exports 3/ -----------------	1,759,800	(1/)	10,364,550	5.89	1,677,076	(1/)	10,873,460	6.48
Apparent consumption 4/----	8,580,925	(1/)	----------	-----	9,507,951	(1/)	----------	-----
Stocks in producers' hands Dec. 31: 3/								
Florida------------------	1,357,000	421,000	(1/)	(1/)	1,033,000	342,000	(1/)	(1/)
Tennessee----------------	5/ 600,000	5/ 172,000	(1/)	(1/)	539,000	151,000	(1/)	(1/)
Western States-----------	5/ 301,000	80,000	(1/)	(1/)	230,000	62,000	(1/)	(1/)
Total stocks--------	5/2,258,000	5/ 673,000	(1/)	(1/)	1,802,000	555,000	(1/)	(1/)

1/ Data not available.
2/ **Market value (price) at port of shipment and time** of exportation to the United States.
3/ As reported by the Bureau of Mines by domestic producers.
4/ Quantity sold or used by producers plus imports minus exports.
5/ Revised figure.

Phosphate rock mined in the United States, 1942-51, by States, in long tons

Year	Florida	Tennessee 1/	Western States	United States	Year	Florida	Tennessee 1/	Western States	United States
1942	2,984,503	1,568,162	266,273	4,818,938	1947	6,381,282	1,489,980	1,239,727	9,110,989
1943	3,274,266	1,868,407	227,294	5,369,967	1948	7,184,297	1,499,547	704,316	9,388,160
1944	3,486,482	1,413,246	300,274	5,200,002	1949	6,695,407	1,403,469	778,598	8,877,474
1945	3,814,935	1,260,849	323,955	5,399,739	1950	8,597,227	1,472,017	1,044,915	11,114,159
1946	5,280,402	1,316,107	572,330	7,168,839	1951	8,211,820	1,424,516	1,138,696	10,775,032

1/ Includes a small quantity of apatite from Virginia in 1942-47 and 1949, and in 1942-43 some matrix of washer grade.

Phosphate rock sold or used by producers in the United States, 1946-51

Year	Long tons	Value at mines		Year	Long tons	Value at mines	
		Total	Average			Total	Average
1946	6,860,713	$31,043,821	$4.52	1949	8,986,933	$51,415,027	$5.72
1947	9,027,030	46,638,837	5.17	1950	10,253,552	59,027,848	5.76
1948	8,668,769	50,501,598	5.83	1951	11,095,204	66,158,078	5.96

Phosphate rock sold or used by producers in the United States in 1950-51, by grades and States

Grades-B.P.L. 1/ content (percent)	Florida		Tennessee		Western States		Total United States	
	Long tons	Percent of total	Long tons	Percent of total	Long tons	Percent of total	Long tons	Percent of total
1950								
Below 60--------------	153,539	2	440,488	32	226,391	29	820,418	8
60 to 66--------------	---------		299,228	22	818	2/	300,046	3
68 basis, 66 minimum---	507,827	6	536,522	39	300,131	38	1,344,480	13
70 minimum-------------	868,016	11	88,957	6	251,469	32	1,208,442	12
72 minimum-------------	1,446,706	18	18,736	1	4,400	1	1,469,842	14
75 basis, 74 minimum---	3,064,690	38	542	2/	-------	---	3,065,232	30
77 basis, 76 minimum---	2,045,092	25	-------	---	-------	---	2,045,092	20
Total---------	8,085,870	100	1,384,473	100	783,209	100	10,253,552	100
1951								
Below 60--------------	227,183	3	523,784	37	516,209	44	1,267,176	11
60 to 66--------------	---------	---	596,820	42	69,263	6	666,083	6
68 basis, 66 minimum---	759,161	9	193,468	14	235,981	20	1,188,610	11
70 minimum-------------	763,631	9	101,605	7	258,100	22	1,123,336	10
72 minimum-------------	1,297,467	15	---------	---	98,928	8	1,396,395	13
75 basis, 74 minimum---	3,616,625	42	975	2/	-------	---	3,617,600	33
77 basis, 76 minimum---	1,832,764	22	---------	---	-------	---	1,832,764	16
Undistributed----------	---------	---	3,240	2/	-------	---	3,240	2/
Total---------	8,496,831	100	1,419,892	100	1,178,481	100	11,095,204	100

1/ Bone phosphate of lime, $Ca_3(PO_4)_2$.
2/ Less than 0.5 percent.

Florida phosphate rock sold or used by producers, 1947-51, by kinds

Year	Hard rock			Soft rock 1/		
	Long tons	Value at mines		Long tons	Value at mines	
		Total	Average		Total	Average
1947	79,330	$618,330	$7.79	88,620	$326,064	$3.68
1948	48,198	368,586	7.65	69,335	293,927	4.24
1949	23,804	173,211	7.28	77,088	344,787	4.47
1950	71,319	538,601	7.55	81,542	408,595	5.01
1951	75,615	582,247	7.70	92,183	495,243	5.37

Year	Land pebble			Total		
	Long tons	Value at mines		Long tons	Value at mines	
		Total	Average		Total	Average
1947	6,314,077	$31,975,858	$5.06	6,482,027	$32,920,252	$5.08
1948	6,421,725	37,070,381	5.77	6,539,258	37,732,894	5.77
1949	6,715,097	37,339,985	5.56	6,815,989	37,857,983	5.55
1950	7,933,009	44,430,646	5.60	8,085,870	45,377,842	5.61
1951	8,329,033	49,185,072	5.91	8,496,831	50,262,562	5.92

1/ Includes material from waste-pond operations.

Tennessee phosphate rock 1/ sold or used by producers, 1946-51

Year	Long tons	Value at mines		Year	Long tons	Value at mines	
		Total	Average			Total	Average
1946	1,362,600	$7,014,490	$5.15	1949	1,344,470	$ 9,067,589	$6.74
1947	1,411,884	7,779,099	5.51	1950	1,384,473	10,028,404	7.24
1948	1,307,507	8,231,251	6.30	1951	1,419,892	10,604,638	7.47

1/ Includes small quantity of Tennessee blue rock in 1946-47 and Virginia apatite in 1946-47 and 1949.

Western States phosphate rock sold or used by producers, 1947-51

Year	Idaho 1/			Montana		
	Long tons	Value at mines		Long tons	Value at mines	
		Total	Average		Total	Average
1947	845,045	$4,077,885	$4.83	236,229	$1,571,117	$6.65
1948	434,375	2,122,089	4.89	248,683	1,720,254	6.92
1949	471,305	1,915,125	4.06	355,169	2,574,330	7.25
1950	573,044	2,125,065	3.71	210,165	1,496,537	7.12
1951	694,446	1,748,074	2.52	304,507	2,353,381	7.73

Year	Utah			Wyoming			Total		
	Long tons	Value at mines		Long tons	Value at mines		Long tons	Value at mines	
		Total	Average		Total	Average		Total	Average
1947	(1/)	(1/)	(1/)	51,845	$ 290,484	$5.60	1,133,119	$5,939,486	$5.24
1948	(1/)	(1/)	(1/)	138,946	695,110	5.00	822,004	4,537,453	5.52
1949	---------	-------	-------	(1/)	(1/)	(1/)	826,474	4,489,455	5.43
1950	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)	783,209	3,621,602	4.62
1951	580	$2,900	$5.00	178,948	1,186,523	6.63	1,178,481	5,290,878	4.49

[1] Idaho includes Utah in 1947-48 and 1950, and Wyoming in 1949-50.

Phosphate rock sold or used by producers in the United States, 1950-51, by uses and States

Uses	Florida		Tennessee		Western States		Total United States	
	Long tons	Per-cent of total	Long tons	Per-cent of total	Long tons	Per-cent of total	Long tons	Per-cent of total
1950								
Domestic:								
Superphosphates--------	5,483,159	68	301,923	22	200,105	26	5,985,187	59
Phosphates, phosphoric acid, phosphorus, ferrophosphorus------	407,735	5	830,837	60	297,362	38	1,535,934	15
Direct application to soil-----------------	562,993	7	219,522	16	73,383	9	855,898	8
Fertilizer filler------	773	(1/)	14,610	1	-------	----	15,383	(1/)
Stock and poultry feed-	81,665	1	16,871	1	2,104	(1/)	100,640	1
Undistributed 2/-------	---------	----	710	(1/)	-------	----	710	(1/)
Exports 3/--------------	1,549,545	19	---------	----	210,255	27	1,759,800	17
Total	8,085,870	100	1,384,473	100	783,209	100	10,253,552	100
1951								
Domestic:								
Superphosphates--------	5,493,396	65	322,607	23	294,510	25	6,110,513	55
Phosphates, phosphoric acid, phosphorus, ferrophosphorus------	739,414	9	867,165	61	564,235	48	2,170,814	20
Direct application to soil-----------------	710,710	8	210,780	15	72,394	6	993,884	9
Fertilizer filler------	392	(1/)	16,454	1	---------	---	16,846	(1/)
Stock and poultry feed-	120,493	1	1,663	(1/)	---------	---	122,156	1
Undistributed 2/-------	---------	----	1,223	(1/)	2,692	(1/)	3,915	(1/)
Exports 3/--------------	1,432,426	17	---------	----	244,650	21	1,677,076	15
Total-----------	8,496,831	100	1,419,892	100	1,178,481	100	11,095,204	100

(Footnotes continued on next page)

Footnotes for preceeding table (page 7).

1/ Less than 0.5 percent.
2/ Includes phosphate rock used in pig-iron blast furnaces, parting compounds, research, defluorinated phosphate rock, refractories, and other uses.
3/ As reported to the Bureau of Mines by domestic producers.

Apparent consumption 1/ of phosphate rock in the United States, 1946-51, in long tons

Year	Long tons	Year	Long tons
1946---------	6,221,525	1949---------	7,735,005
1947---------	7,425,784	1950---------	8,580,925
1948---------	7,700,081	1951---------	9,507,951

1/ Quantity sold or used by producers plus imports minus exports.

Prices per long ton of Florida and Tennessee unground, washed, and dried phosphate rock, in bulk, f.o.b. cars at mine, by grades, in 1951 (Oil, Paint and Drug Reporter)

Grades (percent) 1/	Florida land pebble		Tennessee brown rock	
	Jan. 8, 1951	Dec. 31, 1951	Jan. 8, 1951	Dec. 31, 1951
68/66 B.P.L.	(2/)	(2/)	----------	----------
70/68 B.P.L.	$4.35-4.40	$4.35-4.40	----------	----------
72/70 B.P.L.	5.00	5.00	----------	----------
75/74 B.P.L.	6.00	6.00	----------	----------
77/76 B.P.L.	7.00	7.00	----------	----------
27-26 P_2O_5	----------	----------	$6.45	$6.45
30-29 P_2O_5	----------	----------	7.21	7.21

1/ B.P.L. signifies bone phosphate of lime, $Ca_3(PO_4)_2$.
2/ Not quoted.

World production of phosphate rock by countries, 1/ 1947-51, in metric tons
(Compiled by Helen L. Hunt)

Country 1/	1947	1948	1949	1950	1951
Algeria	713,790	670,591	645,906	684,657	776,575
Angaur Island	107,898	76,713	157,049	2/ 119,000	3/ 144,843
Angola	(4)	(4)	(4)	1,033	943
Australia	5,402	2,170	11	1,653	8,027
Austria	11,525	(4)	(4)	(4)	(4)
Belgium	58,045	68,938	44,643	50,846	(4)
Brazil (apatite)	5,592	(4)	4,553	(4)	(4)
British Borneo (guano)	283	427	508	653	659
Canada	---------	---------	18	117	---------
Chile (apatite)	13,994	59,529	49,311	13,437	(4)
China	(4)	(4)	2/ 20,000	2/ 20,000	2/ 20,000
Christmas Island (Indian Ocean) (exports)	106,765	108,311	255,236	320,423	337,677
Egypt	371,227	377,005	350,480	397,207	499,976
France	104,068	84,580	67,509	73,752	110,000
French Morocco	2,960,735	3,226,700	3,693,000	5/3,872,241	4,716,800
French West Africa (aluminum phosphate)	853	3,965	5,675	11,035	23,580
Germany, West	698	473	---------	---------	---------
India (apatite)	867	1,132	588	3,025	(4)
Indonesia	---------	---------	2/ 5,000	---------	---------
Ireland	10,780	---------	(4)	(4)	(4)
Isreal and Jordan (exports)	6,058	2/ 4,000	(4)	(4)	6,888
Japan	6,802	3,590	684	258	143
Makates Island (French Oceania) (exports)	196,430	183,104	239,532	245,804	277,858
Nauru Island (exports)	177,606	544,298	802,070	1,070,358	942,945
Netherlands Antilles	79,229	58,827	92,784	104,240	106,902
New Zealand	203	---------	---------	---------	---------
Norway (guano)	---------	---------	---------	2,538	(4)

(Cont'd. on next page)

World production of phosphate rock by countries, 1/ 1947-51, in metric tons (Cont'd.)
(Compiled by Helen L. Hunt)

Country 1/	1947	1948	1949	1950	1951
Ocean Island (exports)	212,456	126,854	265,087	251,218	256,451
Philippines, Republic of the (guano)	---------	---------	10,998	32,606	(4)
Seychelles Islands (exports)	14,516	21,722	14,171	10,005	4,547
Southern Rhodesia	9	---------	67	36	---------
South-West Africa (guano)	2,223	1,038	957	581	785
Spain	20,204	23,012	23,093	24,080	22,830
Sweden (apatite)	7,696	1,441	1,604	2,044	(4)
Tanganyika Territory	220	313	157	468	345
Tunisia	1,759,236	1,863,710	1,441,918	1,524,800	1,678,905
Uganda	7,269	---------	---------	467	(4)
Union of South Africa	41,831	39,656	56,471	51,844	81,840
U.S.S.R. 2/	2,032,000	2,336,915	2,540,125	2,540,125	(4)
United States (sold or used by producers)	9,171,914	8,807,903	9,131,173	10,418,122	11,273,282
Total (estimate) 1/	18,240,000	18,755,000	5/19,960,000	5/21,875,000	23,420,000

1/ In addition to countries listed, Korea, Poland, and Rumania produce phosphate rock; but data of output are not available, and estimates by the author of the chapter have been included in the total.
2/ Estimate.
3/ Exports.
4/ Data not available; estimate by author of chapter included in total.
5/ Revised figure.

Foreign Minerals Statistics Unit, Region IX, Bureau of Mines, October 10, 1952

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Oscar L. Chapman, Secretary
J. J. FORBES, Director

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MINERAL MARKET REPORT NO. MMS 2107

SURVEY OF FUEL CONSUMPTION AT REFINERIES IN 1951

By J. G. Kirby [1]

The 646,000 average B.t.u. required to refine a barrel of crude in 1951 was 12,000 B.t.u. below the 1950 average of 658,000, according to the Bureau of Mines, U. S. Department of the Interior. Continued modernization and installation of new equipment enabled the refineries to process a record amount of crude and at the same time increase the operating efficiency of their plants' heating units.

Of the various fuels used to supply the refineries heating requirements in 1951, refinery gas furnished 41 percent, an increase of 1 percent for the year; natural gas, 37 percent - a 2 percent gain; and fuel oil 15 percent - a decline of 2 percent. The use of coal, coke, acid sludge, and steam showed little change from the previous year. 13 percent more electricity was purchased by the refineries in 1951.

REFINERY FUELS

FUEL OIL.- Refineries used 39,883,000 barrels of fuel oil in 1951, or 6 percent less than in 1950. This decline of 2,700,000 barrels occurred mostly in the East Coast, the Indiana-Illinois, and the California refinery districts, principal users of this type of fuel.

ACID SLUDGE.- The use of acid sludge as a fuel increased slightly to 4,178,000 barrels in 1951 compared with 4,102,000 barrels in 1950. Refineries in the Texas Gulf district used 151,000 barrels more during 1951, and in the California district the increase was 110,000 barrels. Several districts reported lesser amounts of acid sludge burned for fuel during the year. In the Oklahoma-Kansas district the decline was 72,000 barrels, and in the Indiana-Illinois, 56,000 barrels.

COAL.- A total of 1,170,000 short tons of coal was consumed in 1951, compared with 1,075,000 short tons in 1950. The percentage of total heat units supplied remained the same as in 1950. The districts using coal were the Appalachian, and the Indiana-Illinois.

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[1] Commodity-Industry Analyst, Petroleum and Natural Gas Branch, Fuels and Explosives Division, Bureau of Mines.

NATURAL GAS.- An increase of 82,678,000 cubic feet in the use of natural gas was reported by the refineries. All refining districts used more natural gas during the year, but most significant was the East Coast district with 9,226,000 cubic feet used in 1951 compared with 2,008,000,000 cubic feet in 1950.

REFINERY GAS.- From the 1951 production of 428,347,000,000 cubic feet of refinery gas, the refineries utilized as plant fuel 422,810,000,000 cubic feet. With the exception of the Louisiana Gulf Coast district all the refining districts reported substantial increases in the use of refinery gas for the year.

COKE.- The amount of coke used by refineries varied little from that reported in 1950. A heavier market demand for petroleum coke resulted in a smaller percentage of the total production being diverted to use at the refineries. A part of the coke used for fuel is catalyst coke burned off the catalyst which could not be classified as a marketable product.

PURCHASED ELECTRICITY.- Refineries purchased 4,027,039,000 kilowatt hours of electric power for use in processing during 1951, an increase of almost 13 percent over the previous year.

Summary of refinery fuels used by years, 1925 - 1951

	Oil thousands of barrels	Acid sludge thousands of barrels	Coal thousands of short tons	Gas Millions of cubic feet		Coke thousands of short tons	Purchased electricity thousands of KW.-hrs.	Total B.t.u. billions (approx.)	Crude runs to stills thousands of barrels	B.t.u. per barrels of crude runs
				Natural	Refinery					
1925.......	1/50,455		6,153	87,842	35,041	314	3/	613,480	739,920	829,000
1926.......	1/46,416		6,052	121,449	52,077	408	3/	648,519	779,264	832,000
1927.......	1/41,462		5,031	123,395	53,465	450	3/	597,497	828,835	721,000
1928.......	1/46,400		3,362	114,950	77,313	470	3/	609,216	913,295	667,000
1929.......	1/51,544		2,300	103,729	98,727	488	573,463	630,837	987,708	639,000
1930.......	1/46,956		1,949	98,842	121,321	580	826,640	623,443	927,447	672,000
1931.......	38,913	5,743	1,412	75,548	149,924	529	917,923	601,122	894,608	672,000
1932.......	34,801	5,924	958	67,467	161,634	333	845,816	567,490	819,997	692,000
1933.......	33,292	4,990	1,069	66,333	172,085	263	900,468	568,460	861,254	660,000
1934.......	33,163	4,702	1,189	79,965	164,741	194	1,022,984	571,470	895,636	638,000
1935.......	31,497	5,178	1,221	80,175	183,383	117	1,071,841	2/594,231	966,243	615,000
1936.......	30,454	4,937	1,310	93,183	210,689	123	1,191,023	638,149	1,068,570	597,000
1937.......	27,849	4,750	1,209	113,005	224,698	84	1,310,589	663,866	1,183,440	562,000
1938.......	28,855	3,467	722	109,741	233,791	75	1,400,499	660,956	1,165,015	567,000
1939.......	31,756	4,009	742	97,685	246,188	123	1,565,254	687,442	1,237,840	555,000
1940.......	32,085	4,428	979	128,007	252,914	113	1,679,092	748,692	1,294,162	579,000
1941.......	33,105	4,517	1,091	148,127	283,021	73	1,862,996	823,320	1,409,192	584,000
1942.......	27,763	4,594	1,706	201,670	265,743	53	2,041,587	839,712	1,334,103	629,000
1943.......	29,011	4,614	1,831	243,584	296,518	114	2,431,187	942,186	1,429,738	659,000
1944.......	36,574	5,550	1,771	315,311	351,123	382	3,048,124	1,152,580	1,665,684	692,000
1945.......	38,557	5,222	1,532	338,458	348,736	596	3,168,395	1,182,736	1,719,534	688,000
1946.......	38,318	5,230	1,718	331,520	318,172	522	2,867,544	1,130,677	1,730,197	653,000
1947.......	38,717	5,824	2,273	363,892	324,737	721	2,957,805	1,198,579	1,852,246	647,000
1948.......	38,653	5,780	2,449	441,470	331,156	925	2,971,068	1,295,099	2,030,670	638,000
1949.......	44,510	4,326	1,011	422,357	361,671	1,254	3,177,410	1,336,101	1,944,221	687,000
1950.......	42,588	4,102	1,075	455,096	370,091	1,455	3,573,163	1,378,420	2,094,867	658,000
1951.......	39,883	4,178	1,170	537,774	422,810	1,458	4,027,039	1,530,413	2,370,404	646,000

1/ Includes acid sludge.
2/ Includes b.t.u.'s from purchased steam starting with 1935.
3/ Not available

Relative rank of various refinery fuels on a percentage basis, 1941-1951

	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Oil...........	24.1	19.9	18.5	19.0	19.6	20.3	19.4	17.9	19.3	17.9	15.1
Acid sludge...	2.5	2.4	2.2	2.2	2.0	2.1	2.2	2.0	1.5	1.3	1.2
Coal..........	3.4	5.3	5.1	4.0	3.4	4.0	4.9	4.9	2.0	2.0	2.0
Natural Gas...	18.0	24.0	25.8	27.4	28.6	29.3	30.4	34.1	33.2	34.7	36.9
Refinery Gas..	51.6	47.5	47.2	45.7	44.2	42.2	40.6	38.4	40.6	40.3	41.4
Coke..........		.2	.4	1.0	1.5	1.4	1.8	2.1	2.8	3.2	2.9
Steam.........	.4	.7	.8	.7	.7	.7	.7	.6	.6	.6	.5
Total.......	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Fuel consumed at refineries in the United States, 1950 - 1951, by districts

District	Oil thousands of barrels	Acid sludge thousands of barrels	Coal thousands of short tons	Gas Millions of cu. ft.		Coke thousands of short tons	Purchased electricity thousands of kw.-hrs.	Total B.t.u. billions (approx.)	Crude runs to stills thousands of barrels	B.t.u. per barrel of crude run
				Natural	Refinery					
1950					1/	2/				
East Coast	18,231	664	-	2,008	44,947	275	578,862	186,775	331,368	564,000
Appalachian	1,472	64	585	2,455	11,445	31	206,222	45,158	60,382	748,000
Indiana, Illinois, Kentucky, etc. .	11,662	490	490	5,206	77,341	489	509,655	218,806	379,143	577,000
Oklahoma, Kansas, Missouri, etc. ..	2,616	404	-	49,024	25,428	54	395,793	108,234	177,285	611,000
Texas Inland	224	10	-	34,604	13,989	-	220,030	58,661	76,221	770,000
Texas Gulf Coast	70	1,902	-	208,562	92,797	296	304,420	376,067	479,085	785,000
Louisiana Gulf Coast	25	225	-	75,242	29,107	225	336,705	130,599	171,407	762,000
Arkansas, Louisiana Inland, etc. ..	62	33	-	11,656	1,768	-	27,437	15,398	26,107	590,000
Rocky Mountain	2,445	125	-	9,668	12,688	85	126,890	46,510	72,539	641,000
California	5,781	185	-	56,671	60,581	-	867,149	192,212	321,330	598,000
Total U.S.A.	42,588	4,102	1,075	455,096	370,091	1,455	3,573,163	1,378,420	2,094,867	658,000
Total B.t.u. (billions approx.) ..	247,010	18,459	27,950	477,851	555,137	3/ 52,013	-	1,378,420	-	-
1951										
East Coast	17,617	659	-	9,226	51,529	283	606,710	200,943	370,394	543,000
Appalachian	1,200	41	590	2,721	12,756	40	207,916	46,143	65,455	705,000
Indiana, Illinois, Kentucky, etc. .	11,187	434	580	8,738	91,257	461	659,162	241,896	438,427	552,000
Oklahoma, Kansas, Missouri, etc. ..	2,654	332	-	51,747	31,365	54	413,304	119,895	189,699	632,000
Texas Inland	137	1	-	39,751	16,785	-	231,113	67,717	89,511	757,000
Texas Gulf Coast	85	2,053	-	230,372	107,509	254	348,148	420,840	571,991	736,000
Louisiana Gulf Coast	40	190	-	90,877	28,197	252	419,128	146,393	183,065	800,000
Arkansas, Louisiana Inland, etc. ...	78	39	-	12,455	3,510	-	31,528	18,970	28,889	657,000
Rocky Mountain	2,623	134	-	14,123	14,541	114	143,764	55,915	83,843	667,000
California	4,262	295	-	77,764	65,361	-	966,266	211,701	349,130	606,000
Total U.S.A.	39,883	4,178	1,170	537,774	422,810	1,458	4,027,039	1,530,413	2,370,404	646,000
Total B.t.u. (billions approx.) .	231,321	18,801	30,420	564,663	634,215	3/ 50,993	-	1,530,413	-	-

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1/ Includes small quantities of butane, propane and other liquefied gases used as fuel.
2/ Includes catalytic coke burned off the catalyst.
3/ Includes purchased steam.

Fuel consumed at refineries in the United States, 1950 - 1951, by states

State	Oil Thous of bbls.		Acid Sludge Thous. of bbls.		Coal Thous. of Short tons		Coke Thous. of short tons		Natural Gas Millions of cu.ft.		Refinery Gas Millions of cu. ft.		Purchased Electricity Thous.of Kw-hrs	
	1950	1951	1950	1951	1950	1951	1950	1951	1950	1951	1950	1951	1950	1951
Arkansas	4	7	33	39	-	-	-	-	9,704	10,336	1,333	3,144	21,426	24,432
California, Washington	5,781	4,262	185	295	-	-	-	-	56,671	77,764	60,581	65,361	867,149	966,266
Colorado	131	111	-	-	-	-	-	-	1,292	1,700	1,032	916	18,401	17,967
Delaware, R. Island, Virginia, Mass.	1,050	1,100	-	-	-	-	-	-	-	-	289	448	25,774	31,275
Georgia, South Carolina	206	209	-	-	-	-	-	-	-	-	510	532	3,162	3,611
Illinois	3,421	2,871	89	66	230	384	241	200	2,263	5,526	29,410	37,232	143,397	226,419
Indiana	4,732	4,740	391	364	200	151	166	174	455	518	23,973	26,301	75,875	80,282
Kansas	1,698	1,772	225	130	-	-	-	-	12,432	12,491	9,913	11,611	201,734	196,190
Kentucky, Tennessee	307	263	-	-	41	37	-	-	2,201	2,592	3,780	3,096	48,339	52,798
Louisiana	30	43	225	190	-	-	225	252	75,936	91,450	29,542	28,563	337,411	419,752
Maryland	811	1,007	38	46	-	-	90	83	-	-	2,873	2,782	4,771	6,205
Michigan	913	992	-	-	-	-	-	-	287	102	3,671	5,414	43,786	46,653
Minnesota, Wisconsin	118	142	-	-	-	-	-	-	-	-	-	-	1,086	1,458
Mississippi, Alabama	53	68	-	-	-	-	-	-	1,258	1,545	-	-	5,305	6,472
Missouri, Nebraska, South Dakota	467	458	-	-	-	-	54	54	2,387	2,601	2,494	2,767	1,993	2,156
Montana	348	187	-	-	-	-	13	35	2,531	2,970	2,672	3,125	21,269	23,870
New Jersey	7,879	9,157	507	589	-	-	183	200	35	-	16,036	19,217	35,538	41,799
New Mexico	42	23	-	-	-	-	-	-	913	4,407	253	236	7,789	6,620
New York	1,348	1,037	-	-	101	110	-	-	248	51	2,595	3,816	58,216	49,468
Ohio	2,619	2,493	28	20	86	70	113	127	162	357	21,531	24,948	262,489	317,980
Oklahoma	451	424	179	202	-	-	-	-	34,205	36,656	13,021	16,987	192,066	214,958
Pennsylvania	7,934	5,990	165	49	388	382	2	-	2,405	9,932	28,416	30,964	575,454	598,006
Texas	294	222	1,912	2,054	-	-	296	254	243,166	270,123	106,786	124,294	524,450	579,261
Utah, Idaho	765	922	-	-	-	-	51	53	345	230	3,498	4,176	25,792	36,109
West Virginia	27	3	-	-	29	36	-	-	1,613	1,607	649	792	16,852	17,834
Wyoming	1,159	1,380	125	134	-	-	21	26	4,587	4,816	5,233	6,088	53,639	59,198
Total United States	42,588	39,883	4,102	4,178	1,075	1,170	1,455	1,458	455,096	537,774	370,091	422,810	3,573,163	4,027,039

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MINERAL MARKET REPORT
MMS NO. 2108

BARITE AND BARIUM CHEMICALS IN 1951

Domestic mine production of primary barite, which had slumped from the record year of 1947, surged to a near-record tonnage of 845,579 short tons in 1951, according to reports by producers to the Bureau of Mines, United States Department of the Interior. Demand began to increase in the latter part of 1950 and continued to expand during 1951. By the end of the year shortages were being reported and producers were making an effort to increase their capacities. Arkansas again was eminent in output with a record tonnage going to the well-drilling trade. Missouri was second in rank with a substantial increase over the previous year but did not reach 1947 output. New production was reported from Montana.

Consumption of 950,893 tons of barite was greater than during any previous year. Significant trends were the large increases in tonnages used in well-drilling muds and as aggregate in concrete.

TABLE 1.--Salient statistics of the barite and barium-chemical industries in the United States, 1948-51

	1948	1949	1950	1951
Barite:				
Primary:				
Produced...........short tons......	777,841	731,308	693,424	845,579
Sold or used by producers:				
Short tons....................	799,848	717,313	695,414	860,669
Value..........................	$6,693,413	$5,642,226	$6,193,906	$7,968,023
Imports for consumption:				
Short tons....................	53,204	26,178	58,381	52,755
Value..........................	$443,515	$192,567	$431,879	$419,494
Consumption.........short tons......	894,309	719,543	1/ 786,131	1/ 950,893
Ground and crushed sold by producers:				
Short tons....................	631,424	554,028	573,359	703,014
Value..........................	$11,195,365	$10,156,590	$11,305,209	$14,590,000
Barium chemicals sold by producers:				
Short tons....................	71,717	57,012	73,689	86,032
Value..........................	$7,028,058	$5,646,403	$7,885,586	$11,656,497
Lithopone sold or used by producers:				
Short tons....................	140,033	78,335	105,650	102,837
Value..........................	$16,135,976	$8,977,178	$13,129,363	$14,470,742

1/ Includes some witherite.

Prepared by Joseph C. Arundale and F. M. Barsigian, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

(Over)

TABLE 2.--Domestic barite sold or used by producers in the United States, 1950-51, by States

State	1950		1951	
	Short tons	Value	Short tons	Value
Arkansas 1/	343,168	$3,088,512	407,085	$3,765,536
Georgia	72,888	766,711	73,117	841,440
South Carolina				
Tennessee				
Missouri	212,736	1,924,520	281,895	2,697,200
Nevada	47,608	268,874	63,201	387,026
Other States 2/	19,014	145,289	35,371	276,821
Total	695,414	6,193,906	860,669	7,968,023

1/ Value estimated.

2/ 1950: Arizona, California, Idaho, and New Mexico; 1951: Arizona, California, Idaho, Montana, and New Mexico.

TABLE 3.--Ground (and crushed) barite sold by producers, 1949-51, by consuming industries

Industry	1949		1950		1951	
	Short tons	Percent of total	Short tons	Percent of total	Short tons	Percent of total
Well drilling	494,579	89	483,519	84	594,668	85
Glass	21,768	4	24,638	4	25,779	4
Paint	20,000	4	28,000	5	28,000	4
Rubber	14,000	2	19,000	3	15,000	2
Concrete aggregates	----	--	15,784	3	38,143	5
Undistributed	3,681	1	2,418	1	1,424	(1/)
Total	554,028	100	573,359	100	703,014	100

1/ Less than 0.5 percent.

TABLE 4.--Distribution of lithopone shipments, by industries, 1949-51, in short tons

Industry	1949		1950		1951	
	Short tons	Percent of total	Short tons	Percent of total	Short tons	Percent of total
Paints, varnishes, and lacquers	1/ 56,146	72	78,177	74	76,614	75
Floor coverings	6,380	8	5,297	5	4,620	4
Coated fabrics and textiles	6,602	8	7,945	8	4,814	5
Paper	2,375	3	2,290	2	6,462	6
Rubber	3,245	4	4,092	4	3,295	3
Other	3,587	5	7,849	7	7,032	7
Total	78,335	100	105,650	100	102,837	100

1/ Includes a quantity, not separable, used for printing ink.

TABLE 5.--Barium chemicals produced and used or sold by producers in the United States, 1949-51, in short tons

Chemical	Plants	Produced	Used by producers 1/ in other barium chemicals 2/	Sold by producers 3/	
				Short tons	Value
Black ash: 4/					
1949	15	97,693	97,753	246	$16,464
1950	12	130,967	130,305	499	33,084
1951	12	152,792	150,434	455	28,361
Carbonate (synthetic):					
1949	4	36,122	10,077	27,010	1,942,845
1950	4	49,299	13,063	36,266	2,746,628
1951	4	60,181	18,541	40,568	3,322,276
Chloride (100 percent $BaCl_2$):					
1949	3	10,513	2,872	7,679	848,637
1950	3	12,285	3,324	8,874	992,722
1951	4	17,959	4,911	12,364	1,830,070
Hydroxide:					
1949	4	3,849	140	3,737	694,097
1950	4	7,927	82	7,888	1,540,046
1951	5	13,483	231	12,757	3,185,405
Oxide:					
1949	3	5,795	4,899	1,118	233,733
1950	3	8,129	6,021	2,162	451,277
1951	3	9,347	6,334	3,073	729,379
Sulfate (synthetic):					
1949	7	15,182	-----	15,371	1,436,557
1950	6	15,821	-----	15,676	1,505,628
1951	6	14,237	-----	13,426	1,448,628
Other barium chemicals 5/:					
1949	(6/)	5,320	2,890	1,851	474,070
1950	(6/)	5,049	2,878	2,324	616,201
1951	(6/)	6,999	2,545	3,389	1,112,378
Total: 7/					
1949	20	-----	-----	57,012	5,646,403
1950	17	-----	-----	73,689	7,885,586
1951	18	-----	-----	86,032	11,656,497

1/ Of any barium chemical.

2/ Includes purchased material.

3/ Exclusive of purchased material and exclusive of sales by one producer to another.

4/ Black-ash data include lithopone plants.

5/ Includes small quantitites of barium acetate, chromate, nitrate, perchlorate, peroxide, and sulfide. Specific chemicals may not be revealed by specific years.

6/ Plants included in above figures.

7/ A plant producing more than 1 product is counted but once in arriving at grand totals.

WORLD PRODUCTION

The following table on world production of barite was prepared in the Foreign Minerals Statistical Unit, Region IX, Bureau of Mines, for inclusion in Minerals Yearbook 1951.

TABLE 6.--World production of barite, by countries 1/, 1946-51, in metric tons
(Compiled by Helen L. Hunt)

Country 1/	1946	1947	1948	1949	1950	1951
Algeria	14,240	23,692	16,681	16,874	2/22,890	21,021
Argentina	10,000	3/35,000	(4/)	(4/)	(4/)	(4/)
Australia	7,711	5,500	3,831	5,552	2/6,028	3/6,500
Austria	816	1,932	3,672	8,004	10,800	9,645
Brazil	10,326	13,971	3/10,000	6,010	6,860	50
Canada	109,242	116,731	86,860	42,763	2/70,013	76,674
Chile	3,752	2,546	2,141	1,461	1,360	(4/)
Colombia	(4/)	3/2,800	120	58	(4/)	(4/)
Egypt	----	167	----	30	----	41
France	34,570	53,970	47,951	32,833	25,027	(4/)
French Morocco	----	----	----	305	2/4,912	3,256
Germany:						
East Germany	5,900	(4/)	(4/)	3/55,500	(4/)	331,324
West Germany	5/39,836	2/5/45,555	2/5/60,068	128,000	230,269	
Greece	----	3/20,000	18,706	15,604	20,799	29,399
India	29,558	24,700	22,691	21,487	8,211	(4/)
Ireland	13,557	12,927	7,035	5,968	4,821	3/7,500
Israel and Palestine	3	(4/)	(4/)	(4/)	(4/)	(4/)
Italy	32,132	68,736	2/65,662	2/51,583	48,142	75,106
Japan	581	907	3,404	2/9,840	14,239	16,704
Korea:						
Korea, Republic of	----	----	----	(4/)	(4/)	(4/)
Northern Korea	3/100	3/1,000	(4/)			
Leeward Islands:						
Antigua	52	14	----	(4/)	(4/)	(4/)
Peru	7,187	6,560	1,787	6,350	3,031	22,635
Portugal	294	1,211	406	427	128	----
South-West Africa	----	----	----	48	----	----
Southern Rhodesia	173	18	51	488	261	85
Spain	12,245	19,817	14,153	7,665	7,147	12,449
Swaziland	224	172	98	104	441	477
Sweden	505	1,319	1,914	923	50	(4/)
Tunisia	408	470	230	630	25	10
Union of South Africa	2,326	2,672	1,734	2,222	2,268	2,038
United Kingdom 6/	112,705	96,267	123,719	118,878	98,557	(4/)
United States	657,908	802,146	705,642	663,428	629,060	767,092
Yugoslavia	(4/)	(4/)	28,648	36,445	29,730	24,822
Total (estimate)	2/1,200,000	2/1,450,000	2/1,375,000	2/1,375,000	2/1,450,000	1,700,000

1/ In addition to countries listed, barite is produced in Belgium, China, Cuba, Czechoslovakia, Mexico, and U.S.S.R., but data on production are not available. Estimates by authors are included in total.

2/ Revised figure.

3/ Estimate.

4/ Data not available; estimate included in total.

5/ Excludes British zone.

6/ Includes witherite.

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MINERAL MARKET REPORT
MMS. NO. 2109

BROMINE IN 1951

Sales approaching 130,000,000 pounds of bromine and bromine in compounds were the highest for any year, exceeding the record previously set in the war year 1944, according to reports by producers to the Bureau of Mines, United States Department of the Interior. The bulk of the increase was attributable to greater consumption in ethylene dibromide which is used as an ingredient of the anti-knock compounds.

Table 1.- Bromine and bromine compounds sold by primary producers in the United States, 1950-51

	Pounds		
	Gross Weight	Bromine Content 1/	Value
1950			
Elemental bromine	4,063,314	4,063,314	$760,274
Sodium bromide	993,614	771,541	256,942
Potassium bromide	2,879,256	1,933,420	748,253
Ammonium bromide	403,190	328,922	116,868
Other, including ethylene dibromide	108,079,443	91,405,103	16,912,641
Total	116,418,817	98,502,300	18,794,978
1951			
Elemental bromine	2/ 6,420,016	2/ 6,420,016	2/ 1,312,409
Sodium bromide	1,005,685	780,915	278,500
Potassium bromide	3,287,821	2,207,773	897,511
Ammonium bromide	401,300	327,381	128,016
Other, including ethylene dibromide	141,275,259	119,826,988	23,563,120
Total	152,390,081	129,563,073	26,179,556

1/ Calculated as theoretical bromine content present in compound.
2/ Also includes some bromine used to make other products than those listed below. In previous years this quantity was excluded.

Prepared by Joseph C. Arundale and F. M. Barsigian under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

(OVER)

Table 2.- Bromine and bromine in compounds sold or used by producers in the United States, 1946-51

Year	Pounds	Value	Year	Pounds	Value
1946...........	42,780,925	$8,560,434	1949...........	88,725,709	$16,267,908
1947...........	78,177,650	14,837,104	1950...........	98,502,300	18,794,978
1948...........	76,047,551	14,825,470	1951...........	129,563,073	26,179,556

In the United States the largest producer, Ethyl-Dow Chemical Chemical Co., recovers bromine from seawater at Freeport, Texas. A second seawater plant is operated by Westvaco Chemical Division of Food Machinery and Chemical Corporation in the San Francisco Bay area. The following firms recover bromine from well brines in Michigan: The Dow Chemical Co., Midland, second largest producer in the United States, Great Lakes Chemical Corporation at Filer City, Michigan Chemical Corporation at St. Louis, and Morton Salt Company at Manistee. Pomeroy Salt Company at Minersville, Ohio, and Westvaco Chemical at South Charleston, West Virginia, also treat well brines. American Potash and Chemical Corporation recovers bromine from the brine of Searles Lake in California.

Interior Duplicating Section, Washington, D. C.

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MINERAL MARKET REPORT
MMS. NO. 2110

MINERAL-EARTH PIGMENTS AND MANUFACTURED IRON-OXIDE PIGMENTS IN 1951

Demand for mineral-earth pigments declined slightly in 1951, and sales of most products were lower than in the previous year, according to reports by producers to the Bureau of Mines. Total sales of mineral-earth pigments totaled 126,432 short tons valued at $14,987,075, approximately 2.2 percent less than that reported in 1950.

Natural mineral-earth pigments accounted for 64.6 percent of the total tonnage produced in 1951. Red oxides accounted for 49.7 percent of the natural pigments or 32.1 percent of the total mineral-earth pigments. Yellow oxides represented 10.2 percent and 6.6 percent, respectively.

Sales of synthetic earth pigments totaled 44,769 short tons or 35.4 percent of the total sales of mineral-earth pigments. Pure red oxides (98 percent or better Fe_2O_3) represented 48.2 percent of the synthetic sales and pure yellow oxides (85 percent or better Fe_2O_3) represented 30.8 percent.

The following firms contributed 1951 production data given in table 1:

American Lignite Products Co., Ione, Calif. (Plant near Buena Vista, Calif.)
American Pigment Corp., Pulaski, Va. (Plants at Hiwassee and Pulaski, Va.)
Blue Ridge Talc Co., Inc., P. O. Box 7, Henry, Va.
Clinton Metallic Paint Co., Box 278, Clinton, N.Y.
E. I. Du Pont de Nemours & Co., Methods Div., Du Pont Bldg., Wilmington 98, Del. (Plant at Newark, N.J.)
Keystone Filler & Mfg. Co., Muncy, Pa.
Mapico Color Division, Columbian Carbon Co., 41 East 42nd St., New York 17, N.Y. (Plants at Trenton and Monmouth Junction, N.J.)
Mineral Pigments Corp., Washington Blvd., Muirkirk, Md.
Minnesota Mining and Mfg. Co., 900 Faquier Ave., St. Paul, Minn. (Plant at Copley, Ohio)
National Aluminate Corp., 6216 W. 66th Place, Chicago 38, Ill. (Plant at Bowman, N. Dak.)
New Riverside Ochre Co., Cartersville, Ga.
Penn Paint & Filler Co., Antes Fort, Pa.
Prince Mfg. Co., Bowmanstown, Pa.
Reichard-Coulston, Inc., 15 E. 26th St., New York 10, N.Y. (Plant at Bethlehem, Pa.)
Rossie Iron Ore Co., Ogdensburg, N.Y.
Ricketson Mineral Color Works, 229 E. Wisconsin Ave., Milwaukee 2, Wis.
Geo. B. Smith Chemical Works, Inc., Maple Park, Ill.

(Cont'd.)

Prepared by Robert D. Thomson and Francis P. Uswald, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, November 20, 1952.

(Cont'd.)

Solomon Grinding Service, 1116 Ridgely Bldg., Springfield, Ill.
Stabilized Pigment Co., New Brunswick, N.J. (Plant at Piscataway, N.J.)
Vitro Pigments, Inc., P. O. Box 4352, Pittsburgh 4, Pa. (Plant at Falls Creek, Pa.)
C. K. Williams & Co., 640 N. 13th St., Easton, Pa.
C. K. Williams & Co., Western Div., 4650 Shellmound St., Emeryville 8, Calif.
C. K. Williams & Co., 2001 Lynch Ave., East St. Louis, Ill.
C. K. Williams & Co., Warren, Ohio

Of special interest to the American paint industry was the uptrend of mineral-earth pigment imports (table 2). French ochers, Italian siennas, Turkey umbers, and Spanish red oxide were received in significant quantities. Imports of mineral-earth pigments in 1951 totaled 14,004 short tons valued at $1,008,374, an increase of 52.7 percent over the tonnage imported in 1950 and 238.5 percent over 1949. Synthetic iron oxide pigments represented 37.9 percent of the total imports, natural iron oxides 24.8 percent and umbers, crude and refined, 24.7 percent.

TABLE 1.- Natural mineral pigments and manufactured iron-oxide pigments sold by processors in the United States, 1950-51, by kinds

Pigment	1950		1951	
	Short tons	Value	Short tons	Value
Mineral blacks	20,615	$ 345,492	17,247	$ 342,013
Precipitated magnetic blacks	1,994	458,518	2,010	479,930
Natural brown oxides (metallic browns)	7,923	458,030	7,710	494,317
Vandyke brown (finished pigment)	209	39,901	150	29,102
Pure browns (96 percent of better iron oxides)	1,258	320,514	1,072	273,661
Natural red oxides	19,027	1,047,602	23,497	1,168,420
Pure red oxides (98 percent or better Fe_2O_3)	21,911	5,156,425	21,560	5,248,167
Venetian reds	5,721	528,287	4,910	490,295
Pyrite cinder	1,957	147,352	1,419	113,773
Other red iron oxides	18,012	2,265,249	17,096	2,230,449
Natural yellow oxides (high Fe_2O_3)	5,437	125,626	6,178	142,321
Pure yellows (85 percent or better Fe_2O_3)	12,767	2,425,927	13,798	2,747,668
Ochers (low Fe_2O_3)	3,506	132,374	2,188	105,628
Siennas:				
Burnt	1,256	209,417	1,108	195,848
Not burnt	1,477	216,031	1,458	234,867
Umbers:				
Burnt	4,130	506,844	3,473	424,760
Not burnt	963	106,343	817	86,954
Other	1,093	272,850	741	178,902
Total	129,256	14,762,782	126,432	14,987,075

TABLE 2.- Selected mineral pigments imported for consumption in the United States, 1948-51

(U. S. Department of Commerce)

Pigments	1948		1949		1950		1951	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
Iron oxide pigments:								
Natural....................	1,967	$138,169	1,194	$ 94,343	2,803	$143,894	3,476	$160,015
Synthetic..................	705	112,363	767	120,281	2,220	294,017	5,303	643,918
Ocher, crude and refined......	89	4,975	89	5,058	157	6,759	815	37,494
Siennas, crude and refined....	251	22,064	211	16,567	474	33,433	779	62,421
Umber, crude and refined......	1,695	45,130	1,758	47,730	3,259	88,168	3,457	93,761
Vandyke brown................	222	20,198	118	11,757	261	18,562	174	10,765
Total.....................	4,929	342,899	4,137	295,736	9,174	584,833	14,004	1,008,374

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MINERAL MARKET REPORT
MMS. NO. 2111

SULFUR OUTPUT INCREASED IN 1951

During 1951 the sulfur industry was primarily concerned with solving the shortage problem that had developed in the previous year. Production of Frasch sulfur increased to a record 5,278,249 long tons - 2 percent more than in 1950. Sales, however, were lower than in the previous year because producers' stocks had been reduced to such a low point that further drafts upon them were considered to be unwise. During the year stocks in producers' hands increased 7 percent.

Domestic production of pyrites increased during 1951 as did the output of the various byproduct forms such as smelter acid, recovered sulfur, hydrogen sulfide and sulfur dioxide. Pyrite increased to 9 percent; smelter acid, 11 percent; and other byproduct sulfur compounds, 42 percent. Total sulfur production in all forms increased from 5,986,482 long tons in 1950 to 6,196,859 in 1951.

International trade in sulfur continued to be an important factor. Foreign demand was greater than United States sources could supply and exports declined from 1,478,522 long tons in 1950 to 1,311,817 in 1951.

The year was particularly noteworthy for the vigorous production expansion programs that were initiated both in the United States and abroad. Progress was made on the development of several new domes and a large number of sulfur recovery plants, particularly for the treatment of petroleum gases. A number of new projects were also in progress which would increase the utilization of pyrites, smelter acid and other sulfur raw materials. As a result of these development programs, it is anticipated that total output of sulfur will increase considerably in the next year or two.

Prepared by F. M. Barsigian, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

(Over)

TABLE 1.--Salient statistics of the sulfur industry in the United States, 1948-51, in long tons

	1948	1949	1950	1951
Native sulfur:				
Production (from Frasch mines)..	4,869,210	4,745,014	5,192,184	5,278,249
Apparent sales.................	5,015,230	4,870,723	5,636,959	5,095,347
Imports.......................	38	32	25	2,377
Exports:				
Crude......................	1,262,913	1,430,916	1,440,996	1,287,773
Treated....................	32,630	30,135	37,526	24,044
Apparent consumption...........	3,719,725	3,409,704	4,158,462	3,785,907
Producers' stocks at end of year	3,225,014	3,099,305	2,654,530	2,837,432
Pyrites:				
Production....................	928,531	888,388	931,163	1,017,769
Imports.......................	107,411	120,937	208,766	221,487
Recovery as byproduct:				
Production of byproduct sulfuric acid (basis, 100 percent) at Cu, Zn, and Pb plants.........	572,719	511,854	661,529	736,672
Production of recovered elemental sulfur (basis, 100 percent S)..	44,369	56,781	142,475	184,013
Other byproduct sulfur compounds, (basis, 100 percent S).........	25,792	37,935	1/41,963	59,613

1/ Revised figure.

TABLE 2.--Production of sulfur and sulfur-containing raw materials by producers in the United States, 1950-51, in long tons

	1950		1951	
	Gross weight	Sulfur content	Gross weight	Sulfur content
Native sulfur or sulfur ore:				
From Frasch-process mines.......	5,192,184	5,192,184	5,278,249	5,278,249
From other mines...............	3,327	1,072	3,945	1,365
Total native sulfur......	5,195,511	5,193,256	5,282,194	5,279,614
Recovered elemental sulfur:				
Brimstone......................	139,731	139,352	182,495	181,935
Paste..........................	6,452	3,123	4,614	2,078
Total recovered elemental sulfur.................	146,183	142,475	187,109	184,013
Pyrites (including coal brasses)...	931,163	392,788	1,017,769	432,819
Byproduct sulfuric acid (basis, 100 percent) produced at Cu, Zn, and Pb plants....................	661,529	216,000	736,672	240,800
Other byproduct sulfur compounds 1/	2/46,977	2/41,963	70,257	59,613
Total equivalent sulfur..	--------	2/5,986,482	--------	6,196,859

1/ Hydrogen sulfide and liquid sulfur dioxide. In addition, a quantity of acid sludge is converted to H_2SO_4, but is excluded from the above figures.

2/ Revised figure.

TABLE 3.--Apparent consumption of sulfur in all forms in the United States, 1947-51, in long tons1/

	1947	1948	1949	1950	1951
Native sulfur..............................	3,490,000	3,719,700	3,409,700	4,158,500	3,785,900
Recovered sulfur shipments..............	43,400	54,300	42,300	78,600	193,800
Pyrites:					
Domestic production..................	392,700	388,400	378,500	392,800	432,800
Imports................................	60,800	51,600	58,000	100,200	106,300
Total pyrites............	453,500	440,000	436,500	493,000	539,100
Smelter acid production..................	212,000	187,000	167,000	216,000	240,800
Other production 2/.....................	20,600	25,800	37,900	3/42,000	59,600
Total....................	4,219,500	4,426,800	4,093,400	2/4,988,100	4,819,200

1/ Crude sulfur or sulfur content.
2/ 1947-49, hydrogen sulfide; 1950-51, hydrogen sulfide and liquid sulfur dioxide. In addition, a quantity of acid sludge is converted to H_2SO_4, but is excluded from the above figures.
3/ Revised figure.

TABLE 4.--Native and recovered sulfur consumed in the United States, 1950-51, by uses, in long tons[1]

Use	1950	1951
Chemicals:		
H_2SO_4	3,422,582	3,067,727
CS_2	233,112	213,892
Other	100,340	95,852
Pulp and paper	419,851	391,066
Ground crude and refined	344,165	290,404
Miscellaneous	28,275	36,772
Total	4,548,325	4,095,713

1/ Source: National Production Authority, Chemical Division, Sulfur Section.

TABLE 5.--World production of native sulfur, by countries 1/, 1946-51, in long tons
[Compiled by Helen L. Hunt]

Country 1/	1946	1947	1948	1949	1950	1951
Argentina	2/10,070	2/10,871	8,388	2/10,048	2/7,785	(3)
Bolivia (exports)	468	2,275	2/2,685	4,398	4,307	9,100
Chile	2/8,979	2/11,659	2/13,124	6,924	15,228	(3)
China (Formosa only)	280	508	1,719	344	72	2,608
Colombia	...	...	592	793	1,461	2,273
Ecuador	26	23	43	16	4/27	1
France (content of ore)	2,083	8,427	6,648	9,587	14,500	26,600
Greece	1,000	...	(3)	...	...	(3)
Italy (crude)5/	140,765	146,310	170,904	2/198,274	209,767	197,382
Japan	21,046	28,670	40,120	61,414	90,940	139,364
Mexico	(3)	3,200	2,100	(3)	(3)	(3)
Peru	363	779	971	271	98	4/1,000
Spain	4,000	3,600	2,500	5,000	2/6,800	(3)
Turkey (refined)	2,970	2,620	2,556	3,046	5,708	7,101
United States	3,859,642	4,441,214	4,869,210	4,745,014	5,192,184	5,278,249
Total (estimate)	4,200,000	4,800,000	5,300,000	5,200,000	5,700,000	5,800,000

1/ Native sulphur believed to be also produced in China (continental), Egypt, Guatemala, Indonesia, Israel-Jordan, and U.S.S.R., but complete data are not available; estimates by senior author of chapter included in total.

2/ Revised figure.

3/ Data not available; estimate by author of chapter included in total.

4/ Estimate.

5/ In addition the following tonnages of ground sulfur rock (30% "S") were produced and used as an insecticide: 1946, 12,592 tons; 1947, 18,716 tons; 1948, 15,176 tons; 1949, 19,213 tons; 1950, 15,778 tons; 1951, 22,120 tons.

Foreign Minerals Statistics Unit, Region IX, Bureau of Mines, July 25, 1952.

TABLE 6.--World production of pyrites (including cupreous pyrites), by countries, 1/ 1947-51, in metric tons

[Compiled by Helen L. Hunt]

Country 1/	1947		1948		1949		1950		1951	
	Gross weight	Sulfur content	Gross weight	Sulfur content	Gross weight	Sulfur content	Gross weight	Sulfur content	Gross weight	Sulfur content
Algeria	35,295	14,745	35,900	14,360	32,705	13,082	25,075	2/10,030	31,450	12,580
Australia	110,410	51,547	90,848	42,230	87,923	41,021	113,973	53,887	154,182	72,768
Austria	6,139	2,047	7,871	2,942	11,624	4,064	12,489	3,133	9,756	2,645
Brazil	3,600	3/1,500	3,600	3/1,500	(4)	(4)	(4)	(4)	(4)	(4)
Canada	161,718	74,967	166,985	79,039	227,227	106,667	283,597	136,519	(4)	(4)
China	64,876	29,200	42,907	19,300	(4)	(4)	(4)	(4)	(4)	(4)
Cyprus	611,800	293,664	589,772	283,091	942,808	452,548	2/839,889	2/398,347	959,838	460,722
Czechoslovakia	6,002	3/2,200	3,195	3/1,200	(4)	(4)	(4)	(4)	(4)	(4)
Finland	152,268	66,891	177,512	79,170	180,040	80,409	2/162,050	2/3/72,300	232,546	3/103,700
France	196,180	76,417	181,683	82,238	205,909	2/90,600	247,642	108,962	280,600	3/124,000
French Morocco	...	...	70	34	202	95	2/1,473	2/692	1,949	877
Germany, West	321,000	128,400	383,100	153,245	431,963	173,582	525,400	3/210,200	533,530	194,616
Greece	58,185	28,000	16,236	3/7,800	15,785	3/7,600	87,678	3/42,000	181,263	88,819
Italy	2/642,674	2/292,802	2/836,245	2/3/385,000	2/852,896	2/3/392,000	895,459	3/412,000	898,023	3/404,000
Japan	2/875,921	2/371,391	1,138,782	489,676	2/1,542,360	2/663,200	2/1,928,750	2/786,930	2,250,784	904,815
Norway	720,015	310,079	2/735,021	2/314,940	2/744,762	2/317,920	749,363	2/336,950	696,217	313,300
Poland	39,659	3/15,900	58,100	3/25,000	81,000	3/36,000	(4)	(4)	(4)	(4)
Portugal	388,827	174,972	561,136	3/252,500	622,925	3/280,300	613,522	276,085	729,611	328,325
Rumania	(4)	(4)	(4)	(4)	3/5,000	(4)	(4)	(4)	(4)	(4)
Southern Rhodesia	17,144	3/7,115	13,224	3/5,500	16,968	6,787	13,810	5,524	28,269	12,156
Spain	1,217,442	3/584,400	1,463,912	3/702,700	2/1,559,044	2/3/748,300	2/1,453,032	2/697,500	1,630,711	3/782,700
Sweden	310,571	147,602	392,033	181,987	424,007	205,085	406,800	3/195,300	420,000	3/201,600
Tunisia	6,345	2,855	2,851	1,297	2,920	3/1,300	1,150	3/500	...	...
Turkey	5,000	(4)	...	...	...	...	...	...	...	...
Union of South Africa	34,820	15,166	35,992	15,456	35,527	15,274	36,026	2/15,623	33,378	14,474
United Kingdom	10,106	4,100	2/10,800	2/3/4,300	2/17,191	2/3/6,900	13,501	3/5,400	(4)	(4)
United States	955,749	398,975	943,434	394,583	905,746	385,518	946,108	399,092	1,034,104	439,766
Yugoslavia	76,000	31,800	2/91,000	38,400	73,000	32,300	117,187	3/54,000	143,779	3/67,000
Total (estimate)	8,700,000	3,700,000	9,700,000	4,000,000	2/11,000,000	2/4,600,000	2/11,600,000	2/4,900,000	12,600,000	5,300,000

1/ In addition to countries listed, East Germany, Kenya, Korea, and U.S.S.R., produce or have produced pyrites, but production data are not available; estimates by senior author of chapter included in total.
2/ Revised figure.
3/ Estimate.
4/ Data not available; estimate by author of chapter included in total.

Foreign Minerals Statistics Unit, Region IX, Bureau of Mines, July 25, 1952.

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MINERAL MARKET REPORT
M. M. S. NO. 2112

LEAD INDUSTRY IN 1951

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

The domestic lead industry was featured by a marked decline in available supply in 1951, according to the Bureau of Mines, United States Department of the Interior. The supply totaled 1,155,113 tons in 1951 compared with 1,434,898 tons in 1950, a 20 percent decrease. Supply was composed of mine production of recoverable lead (388,164 tons), secondary lead recovered (518,110 tons) and imports (248,839 tons). Imports were less than half of the 1950 total, accounting for most of the decrease. Consumption of primary, antimonial, and secondary lead was the second highest on record, lower only than in 1950, and was limited somewhat by available supplies. The expanding national defense program engendered a strong demand for lead during most of the year; it was not until the last four months that consumption of lead was brought into balance with available supplies.

Lead was brought under inventory control on February 16 through the National Production Authority Order M-38. This order was amended on May 28 to set forth certain limitations on the acceptance of rated orders so as to provide for the equitable distribution of such orders, to provide for the creation of a set-aside reserve of pig lead to meet emergency situations, and to establish limitations on the use of lead and lead products. The amended order restricted the use of lead forms and materials beginning June 1, to not more than 100 percent of the average monthly use by weight during the first 6 months of 1950, and prohibited its use for any new purposes. Order M-76, issued on July 26, placed the supply of soft pig lead produced by primary refiners under allocation control. Effective November 1 imported pig lead was also placed under allocation control by Order M-76 as amended. Lead prices were generally quoted at 17.00 cents per pound, New York, until October 2, when the Office of Price Stabilization permitted a 2-cent rise.

Production. - Domestic mine production of recoverable lead declined to 388,164 tons in 1951, 10 percent below the 1950 total and the lowest annual output since 1947. The decrease was accounted for partly by the shutdown of most of the lead mines, mills, and smelters in the Western States by a strike from August 23 to September 6, and partly by depletion of orebodies. Missouri was by far the largest lead-producing State, accounting for 32 percent of the total United States output. Idaho and Utah were second and third in production, with 20 percent and 13 percent, respectively, of the total. Production in 8 of the 15 principal States or regions was lower than that in 1950. The largest decreases, on a tonnage basis, were in Idaho, Arizona, Missouri, Oklahoma, Washington, Nevada, and California. States in which lead production increased substantially included Utah, Colorado, Montana, and New Mexico.

Prepared December 1, 1952, by O. M. Bishop and Edith E. den Hartog, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Mine production of recoverable lead in the United States, 1950-51, by States, in short tons

State	1950	1951
Western States and Alaska:		
Alaska	149	21
Arizona	26,383	17,394
California	15,831	13,967
Colorado	27,007	30,336
Idaho	100,025	76,713
Montana	19,617	21,302
Nevada	9,408	7,148
New Mexico	4,150	5,846
Oregon	17	2
South Dakota	-------	2
Texas	129	43
Utah	44,753	50,451
Washington	10,334	8,002
Wyoming	-------	-------
Total	257,803	231,227
West Central States:		
Arkansas	9	33
Kansas	9,487	8,947
Missouri	134,626	123,702
Oklahoma	20,724	16,575
Total	164,846	149,257
States East of the Mississippi River:		
Illinois	2,729	3,160
Kentucky	66	107
New York	1,484	1,500
Tennessee	113	14
Virginia	3,254	1,508
Wisconsin	532	1,391
Total	8,178	7,680
Grand total	430,827	388,164

Data based upon reports from producers indicate that 421,586 tons of refined lead and 60,893 tons of antimonial lead were produced from domestic and foreign ores and base bullion and from scrap at primary refineries in 1951. These outputs compare with production of 513,769 tons of refined lead and 53,455 tons of antimonial lead in 1950. Although some scrap lead is treated at primary smelters and refineries, the greater part is received at a large number of plants that treat scrap exclusively. The distribution of lead, according to source, is shown in the following table.

Refined lead produced at primary refineries in the United States, by sources, 1950-51, in short tons

	1950	1951
Refined lead:		
From domestic ores and base bullion..........	418,809	342,644
From foreign ores..........................	86,241	71,984
From foreign base bullion..................	3,264	3,065
Total from primary sources................	508,314	417,693
From scrap.................................	5,455	3,893
Total refined lead........................	513,769	421,586
Average sales price per pound.................	$0.135	$0.173
Total calculated value of primary refined lead 1/	$137,245,000	$144,522,000

1/ Excludes value of refined lead produced from scrap at primary refineries.

Secondary lead recovery in 1951 was 7 percent above the 1950 figure and exceeded the domestic mine output of recoverable lead for the sixth consecutive year. Recovery at primary and other plants in 1950-51 is shown in the following table.

Secondary lead recovered in the United States, 1950-51, in short tons

	1950	1951
As refined metal:		
At primary plants..........................	5,455	3,893
At other plants............................	123,858	165,023
Total..................................	129,313	168,916
In antimonial lead:		
At primary plants..........................	38,383	34,303
At other plants............................	187,257	195,660
Total..................................	225,640	229,963
In other alloys...............................	127,322	119,231
Grand total............................	482,275	518,110
Value..................................	$130,214,250	$179,266,060

Consumption. - Domestic lead consumption (including lead in lead ore consumed directly in the manufacture of lead pigments and salts) totaled 1,184,793 short tons in 1951. Of the total consumed, 749,590 tons were refined soft lead and 296,555 tons were contained in antimonial lead, 26,205 tons in unmelted white scrap 45,784 tons in "percentage metals," 24,303 tons in copper-base scrap, 29,538 tons in drosses and residues, and 12,818 tons in the manufacture of lead compounds. In 1951, 74 percent of all lead consumed was used in the manufacture of metal products. Production of the 3 largest lead-consuming items -- batteries, cable coverings, and tetraethyl fluid -- took 54 percent of all lead consumed during the year. Batteries took 32 percent and cable covering and tetraethyl fluid each 11 percent.

Consumption of lead in the United States in
1950-51, in short tons

	1950	1951
Metal Products:		
Ammunition	38,438	40,242
Bearing metals	38,241	35,410
Brass and bronze	21,461	29,858
Cable covering	131,989	131,863
Calking lead	53,450	46,544
Casting metals	19,295	22,497
Collapsible tubes	13,386	13,657
Foil	3,941	2,881
Pipes, traps, and bends	41,361	33,095
Sheet lead	30,778	31,210
Solder	94,606	82,465
Storage batteries (antimonial lead)	212,464	199,838
Storage batteries (oxides)	185,945	175,546
Terne metal	3,805	2,051
Type metal	24,776	28,236
Total	913,936	875,393
Pigments:		
White lead	36,181	25,578
Red lead and litharge	101,974	88,031
Pigment colors	13,464	12,796
Other 1/	14,768	13,099
Total	166,387	139,504
Chemicals:		
Tetraethyl lead	113,846	128,407
Miscellaneous chemicals	11,680	6,949
Total	125,526	135,356
Miscellaneous Uses:		
Annealing	6,456	6,656
Galvanizing	2,426	2,173
Lead plating	1,521	1,444
Weights and ballast	6,870	7,913
Total	17,273	18,186
Other Uses Unclassified	14,859	16,354
Total consumed	1,237,981	1,184,793

1/ Includes lead content of leaded zinc oxide production.

Lead consumption in the United States in 1951
by class of product and type of material
in short tons

	Soft and antimonial lead	Scrap, percentage metal, drosses, etc.	Total
Metal products............	751,469	123,924	875,393
Pigments.................	126,603	83	126,686
Chemicals................	135,356	-------	135,356
Miscellaneous............	17,547	639	18,186
Unclassified.............	15,170	1,184	16,354
Total..............	1,046,145	125,830	1/1,171,975

1/ Excludes 12,818 tons of lead contained in leaded zinc oxide.

Stocks. - Producers' stocks of refined primary lead dropped from 28,894 tons on December 31, 1950 to 18,518 tons, an extremely low level, at the end of 1951. Antimonial lead stocks totaled 6,821 tons on December 31 compared with 6,725 tons in 1950. Consumers' stocks of lead decreased 27 percent during 1951. The decline was consistent through the first 6 months, was reversed in July, and then continued the downward trend through the remainder of the year, dropping from 139,884 tons on January 1 to 102,760 tons on December 31.

Stocks of lead held at primary smelters and refineries
at the end of the year, 1950-51, lead content, in short tons

	Refined lead	Antimonial lead	In ore, concentrates, etc. 1/	In base bullion 1/
Dec. 31, 1950....	28,894	6,725	42,346	11,993
Dec. 31, 1951....	18,518	6,821	44,378	11,315

1/ Excludes material in process.

Consumers' stocks of lead at the end of 1950 and 1951,
by types of materials, in short tons

	Refined soft lead	Antimonial lead	Unmelted white scrap	Percentage metals	Copper-base scrap	Drosses, residues, etc.	Total
Dec. 31, 1950 1/	87,285	27,737	5,406	6,446	1,558	11,452	139,884
Dec. 31, 1951	56,731	28,221	3,140	7,054	1,429	6,185	102,760

1/ Revised.

Prices. - Ceiling prices were established for lead on January 26, 1951 at the highest price (for each seller) at which sales were made between December 19, 1950 and January 25, 1951. Thus a number of ceiling prices were maintained. The bulk of lead sales, however, were at 17.00 cents per pound, common lead, New York. This price remained in effect until October 2 when the Office of Price Stabilization permitted a rise of 2 cents per pound.

The official London price of £136 per long ton of lead (equivalent to 16.98 cents per pound computed on the 279.75 cent base fixed by the Ministry of Supply on November 1, 1950) remained in effect until April 1, 1951 when the Ministry raised the price to £160 (19.98 cents). The price was raised again on July 14 to £180 (22.48 cents). On October 1 the official price was reduced to £175 (21.86 cents) at which level it remained for the balance of the year.

Foreign trade. - Total imports of lead declined to 248,839 tons in 1951, 52 percent less than the all-time high of 521,796 tons in 1950. Imports fell so drastically because foreign producers were reluctant to export lead to the United States owing to the fact that the free world market price for lead was considerably higher than the United States ceiling price. By the end of the year, however, the United States "calculated risk" policy of maintaining a ceiling price well below the free market price had succeeded to the extent that world prices for lead were essentially the same as the United States price. This reduction occurred principally because foreign producers could not sell outside the United States all the lead they produced.

Of total imports 178,907 tons or 72 percent were as pigs and bars, 67,651 tons or 27 percent in ore and matte, and 2,281 tons or 1 percent in base bullion. Canada supplied 32 percent of the pigs and bars, Mexico 21 percent, Yugoslavia 20 percent, Peru 18 percent, and Australia 8 percent. Imports of lead in ore and matte were obtained from Peru (25 percent), Bolivia (24 percent), Union of South Africa (16 percent), Canada (11 percent), Australia (11 percent), and several other countries. Base bullion imports were obtained almost entirely from Australia.

Exports of pig lead (excluding re-exports of foreign refined lead) totaled 1,281 tons compared with 2,735 tons in 1950.

Tariff. - The abrogation of the Mexican Trade Agreement, effective January 1, 1951, restored the import duties of 1½ cents per pound on lead-bearing ores, flue dust, and mattes (lead content) and 2 1/8 cents per pound on lead bullion, pigs, bars, scrap lead, antimonial lead, type metal, babbitt metal, solder, and alloys not specifically provided for, established by the Tariff Act of 1930. The Mexican Agreement was reaffirmed on June 6, 1951, reestablishing the 1 1/16 cents and 3/4 cent duties on pig lead and lead in ores and concentrates, respectively.

Imports and exports of lead in 1950 and 1951 1/, in short tons

	1950	1951
Imports (general 2/):		
In ore and matte	4/ 76,520	67,651
In base bullion	3,488	2,281
Pigs and bars	4/ 441,788	178,907
In reclaimed, scrap, etc.	4/ 20,039	9,082
Imports (for consumption 3/):		
In ores, flue dust and matte	4/ 95,068	31,470
In base bullion	4/ 1,148	-------
Pigs and bars	4/ 434,410	178,896
Sheets, pipe, and shot	207	255
In babbitt, solder, white metal, etc.	4/ 2,744	988
In type metal and antimonial lead	4/ 10,582	8,660
Exports:		
Pigs and bars	2,735	1,281
Foreign lead re-exported	53	-------

1/ Figures on imports and exports compiled from records of the United States Department of Commerce.

2/ General imports include material imported for immediate consumption plus material entering country under bond.

3/ Imports for consumption include material for which duty has been paid irrespective of the actual date of importation.

4/ Revised figures.

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SECONDARY LEAD IN 1951

Recovery of secondary lead increased 7 percent in 1951 to 518,110 tons valued at $179,266,060 compared with 482,275 tons valued at $130,214,250 in 1950. For the sixth consecutive year, recovery of lead from scrap was greater than domestic mine production. Approximately the same coverage of the industry was obtained in both years, greater demand for lead being responsible for the increased recovery rather than additional reporting companies.

Shipment of secondary lead, as metal, increased from 135,178 tons, with a secondary lead content of 129,313 tons, in 1950 to 171,907 tons, with a secondary content of 168,916 tons, in 1951 -- a gain of 31 percent. Secondary antimonial lead products shipped totaled 261,157 tons with a secondary lead content of 229,963 tons -- a slight increase over 1950 -- but lead recovered in solder, type metals and lead babbitt declined 13, 14 and 1 percent, respectively. Total output of the industry was 6 percent greater than in 1950, including the primary metals added to scrap. Primary metals so used, however, dropped from about 12,000 tons a month in 1950 to 8,000 tons in 1951. Secondary smelters consumed a total of 103,668 tons of primary metal during the year, of which 74,465 tons were soft lead, 8,288 tons were antimonial lead, 14,447 tons were primary and detinners' brand tin, 6,108 tons were primary antimony in metal and in ore, and 360 tons were miscellaneous metals such as arsenic and bismuth.

Primary lead refiners reclaimed 38,196 tons of lead from scrap in 1951 or 7 percent of the total. Of this quantity, 3,893 tons were refined soft lead and 34,303 tons were in antimonial lead; antimony content of the antimonial lead was 2,060 tons.

Smelters consumed 673,780 tons of lead-base scrap during the year -- an increase of 10 percent. The increase was due almost entirely to a 19-percent gain in battery plates treated and a 49-percent gain in the use of drosses and residues. Consumption of soft lead scrap declined 4 percent, antimonial lead 45 percent, cable lead 37 percent and solder 34 percent. Smelter operations were highest in the first and last quarters of the year and reached the lowest point in September.

Due to the expanding national defense program and a decline in the available supply, lead was brought under inventory control on February 16 through the National Production Authority Order M-38. On June 29, the Office of Price Stabilization rolled back prices on scrap and secondary lead to 15.25 and 17.00 cents per pound, respectively, and established a ceiling on battery-plate smelting at $40 a ton. The move was deemed necessary to correct the "abnormal price

Prepared December 8, 1952 by A. J. McDermid and Edith E. den Hartog, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

relationship" between primary and seconday metal. The 17-cent ceiling price for primary lead had been effective since January 26, but uncontrolled secondary lead and even scrap lead were often selling well above the ceiling price for primary metal. On October 2, a ceiling of 19.00 cents was authorized for primary lead but the corresponding adjustment for scrap and secondary lead was not made until October 22. No further price change occurred during the remainder of the year. Keen competition for battery plates during the first two thirds of the year kept the smelting charge well below the $40 limit. In January the most quoted charge was from $30 to $35 decreasing to $20 by March 31 and then dropping by June 22 to "Nil to $5". By the middle of August the rate had again advanced to the $40 ceiling where it remained through December 31.

Percentage and remelt metals circulated inside the secondary lead industry totaled 33,365 tons in 1951, consisting of 4,168 tons of solder, 3,981 tons of lead babbitt, 7,657 tons of soft lead, 15,341 tons of antimonial lead, 1,509 tons of type metals, 288 tons of cable lead, 377 tons of tin babbitt, 38 tons of remelt tin and 6 tons of pewter. In addition, smelters shipped to consumers 467,005 tons of these metals during the year and held in inventory 27,548 tons on December 31.

Lead recovered from scrap processed in the United States, 1950-51, in short tons

Recoverable lead content of scrap processed			Lead recovered from scrap processed		
Kind of scrap	1950	1951	Form of recovery	1950	1951
New scrap:			As metal:		
Lead-base	46,370	68,064	At primary plants	5,455	3,893
Copper-base	8,385	8,388	At other plants	123,858	165,023
Total	54,755	76,452	Total	129,313	168,916
Old scrap:					
Battery lead plates	242,213	282,630	In antimonial lead 1/	225,640	229,963
All other lead-base	163,398	135,109	In other lead alloys	107,635	95,516
Copper-base	21,886	23,897	In copper-base alloys	18,695	23,044
Tin-base	23	22	In tin-base alloys	992	671
Total	427,520	441,658	Total	352,962	349,194
Grand total	482,275	518,110	Grand total	482,275	518,110

1/ Includes 38,383 tons of lead recovered in antimonial lead from secondary sources at primary plants in 1950 and 34,303 tons in 1951.

Stocks and consumption of new and old lead scrap in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year 1/	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
Smelters & Refiners						
Soft lead..............	2,943	58,367	-	58,208	58,208	3,102
Hard lead..............	2,314	16,400	-	15,990	15,990	2,724
Cable lead.............	525	18,518	-	18,726	18,726	317
Battery-lead plates....	27,864	410,205	-	416,612	416,612	21,457
Mixed common babbitt...	970	7,934	-	8,300	8,300	604
Solder and tinny lead..	727	13,074	-	13,307	13,307	494
Type metals............	1,030	24,648	-	24,422	24,422	1,256
Dross and residues.....	24,511	99,527	99,230	-	99,230	24,808
Total............	60,884	648,673	99,230	555,565	654,795	54,762
Foundries and other manufacturers						
Soft lead..............	486	1,690	62	1,969	2,031	145
Hard lead..............	39	664	26	641	667	36
Cable lead.............	37	147	-	120	120	64
Battery-lead plates....	17	111	-	5	5	123
Mixed common babbitt...	655	15,090	361	14,399	14,760	985
Solder and tinny lead..	-	1,172	1,103	69	1,172	-
Type metals............	4	182	-	181	181	5
Dross and residues.....	5	45	49	-	49	1
Total............	1,243	19,101	1,601	17,384	18,985	1,359
Grand total.......	62,127	667,774	100,831	572,949	673,780	56,121

1/ Revised.

Shipments 1/ of secondary lead, tin, and lead- and tin-alloy products in the United States in 1951, gross weight, in short tons

Product	Gross weight of products 2/	Secondary metal content			
		Lead	Tin	Antimony	Copper
Refined pig lead	132,363	132,363	-	-	-
Remelt lead	37,503	36,247	-	-	-
Lead foil	2,041	306	-	-	-
Total	171,907	168,916	-	-	-
Refined pig tin	3,543	-	3,543	-	-
Remelt tin	445	-	149	-	-
Tin foil	28	-	3	-	-
Total	4,016	-	3,695	-	-
Lead and tin alloys:					
Antimonial lead	261,157	229,963	285	16,747	-
Common babbitt	35,618	25,923	1,412	2,631	22
Genuine babbitt	1,740	172	324	69	18
Other tin babbitts	1,856	499	357	94	36
Solder	119,695	34,560	5,591	341	6
Type metals	41,847	33,414	1,932	3,947	-
Miscellaneous lead-tin alloys	2,772	1,327	101	112	-
Total	464,685	325,858	10,002	23,941	82
Composition foil	468	292	60	2	-
Tin content of chemical products	542	-	542	-	-

1/ Most of the figures herein represent shipments rather than production of the items involved. However, it has been necessary to record actual production figures in some instances where the information is secured from reports on that basis.

2/ Difference between gross weight of products and secondary metal content represents added primary metals or impurity content.

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SECONDARY TIN IN 1951

Secondary tin recovered in 1951 totaled 34,434 tons valued at $88,357,644 a 3-percent decrease in quantity from the 35,481 tons valued at $67,809,158 reclaimed in 1950.

At both detinner plants and secondary smelters and as metal and in alloys (with the exception of copper-base alloys), secondary tin recovered was less than in 1950. Detinners produced 3,529 tons of pig tin from old tin cans and new tinplate clippings, and secondary smelters reclaimed an additional 166 tons. The total tin reclaimed as metal (3,695 tons) was 9 percent under that recovered as metal in 1950. Recovery in solder, babbitts, chemical compounds and in lead-base alloys all declined considerably, but recovery of tin in brass and bronze increased 30 percent. Shipments of secondary tin and lead-tin alloys are presented in the Secondary Lead report.

Secondary smelters consumed 6,211 tons of tin-base scrap, an increase of 12 percent over the quantity of scrap treated in 1950. However, the greatest increase was in residues treated which yield a comparatively low quantity of metal, and did not, therefore, raise total recovery proportionately.

Late in 1950, inventory control of alloys and other materials containing tin had been effected and limits set on non-defense uses, both orders applying to scrap and secondary tin as well as primary. On January 9, 1951, NPA Order M-8 was again amended permitting smelters and refiners of secondary tin maximum use of tin scrap in the production of pig tin, alloys and chemicals. The amendment was designed to encourage the conversion of tin-bearing scrap to usable metal. Another amendment to M-38 on January 27 further restricted the end use of tin (including secondary tin), and on March 2 the metal was placed under complete allocation.

The average monthly price of scrap tin pipe was 90 cents a pound in January, rose to $1.19 in February and gradually declined thereafter to 90 cents in December, following the trend of prices for primary metal.

Exports of tin-base scrap totaled 6,182 short tons in 1951, almost double the quantity exported in 1950, and consisted mostly of drosses and residues.

Prepared December 8, 1952 by Archie J. McDermid and Edith den Hartog, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

—Secondary tin recovered in the United States, 1950-51, in short tons

Recoverable tin content of scrap processed		
Kind of scrap	1950	1951
New scrap:		
Tin plate	4,221	3,826
Tin-base	1,314	1,505
Lead-base	2,116	2,682
Copper-base	3,647	3,463
Total	11,298	11,476
Old scrap:		
Tin cans	120	166
Tin-base	2,874	3,128
Lead-base	8,888	6,985
Copper-base	12,301	12,679
Total	24,183	22,958
Grand total	35,481	34,434

Tin recovered from scrap processed		
Form of recovery	1950	1951
As metal:		
At detinning plants	3,766	3,529
At other plants	283	166
Total	4,049	3,695
In solder	9,195	5,591
In tin babbitt	873	681
In chemical compounds	701	542
In lead-base alloys	5,148	3,790
In brass and bronze	15,515	20,135
Total	31,432	30,739
Grand total	35,481	34,434

Stocks and consumption of new and old tin scrap in 1951 in the United States, gross weight in short tons

Scrap item Smelters & Refiners	Stocks 1/ beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
Block-tin pipe, scrap, and foil.........	31	1,166		994	994	203
Tin scruff and dross..	624	2,144	1,992		1,992	776
No. 1 pewter..........	18	114		118	118	14
High-tin babbitt......	332	2,231		2,342	2,342	221
Residues..............	177	759	651	-	651	285
Total.......	1,182	6,414	2,643	3,454	6,097	1,499
Foundries and other Manufacturers						
Block-tin pipe, scrap, and foil.........	1	40	9	32	41	-
Tin scruff and dross..						
No. 1 pewter..........						
High-tin babbitt......	3	70	10	63	73	-
Residues..............						
Total.......	4	110	19	95	114	-
Grand total..........	1,186	6,524	2,662	3,549	6,211	1,499

1/ Revised

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SECONDARY ANTIMONY IN 1951

Recovery of secondary antimony in 1951 from lead- and tin-base scrap totaled 23,943 tons valued at $21,149,331, an increase of 10 percent over the 21,862 tons valued at $12,859,228 recovered in 1950.

Secondary copper and lead smelters recovered 21,883 tons, or 91 percent of the total, and primary lead smelters 2,060 tons or 9 percent.

Consumption of battery plates increased 19 percent over 1950 and yielded 55 percent of all antimony reclaimed. Antimony reclaimed in antimonial lead increased 26 percent, but recovery declined in other lead alloys and in tin-base alloys.

Lead remelters, smelters and refiners, both secondary and primary, recovered 94 percent of the antimony reclaimed and manufacturers and foundries the remaining 6 percent. Data on consumption of scrap from which antimony was recovered may be found in the tables on consumption of lead- and tin-base scrap in the published 1951 reports of the Bureau of Mines on these metals. Products in which antimony was recovered are included in the lead- and tin-products table in the Secondary Lead report.

Prepared December 8, 1952 by Archie J. McDermid and Edith E. den Hartog, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Table [illegible].—Secondary antimony recovered in the United States, 1950-1951,
in short tons

Recoverable antimony content of scrap processed

Kind of scrap	1950	1951
New scrap:		
Lead-base	3,091	4,006
Tin-base............	---	1
Total........	3,091	4,007
Old scrap:		
Lead-base..........	18,602	19,768
Tin-base..........	169	168
Total........	18,771	19,936
Grand total..	21,862	23,943

Antimony recovered from scrap processed

Form of recovery	1950	1951
In antimonial lead....	13,326	16,747
In other lead alloys..	8,299	7,033
In tin-base alloys....	237	163
Grand total.......	21,862	23,943

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SECONDARY COPPER AND BRASS IN 1951

Recovery of copper from all classes of nonferrous scrap totaled 932,282 short tons in 1951 compared with 977,239 tons in 1950, according to the Bureau of Mines, United States Department of the Interior.

The decline was due chiefly to lowered activity of the primary copper producers who recovered 144,000 tons of secondary copper in 1951 and 195,000 in 1950. Secondary smelters and brass mills reclaimed 325,000 and 315,000 tons of copper respectively in 1951, which was in each case not far below the figure for 1950. Foundries reported recovery of 123,000 tons of copper from scrap in 1951, 6,000 more than in 1950, but the increase probably reflected better coverage of foundries by the 1951 canvass, rather than actual greater recovery. Reporting on consumption of copper materials was made mandatory in 1951 after having been on a voluntary basis previously, except for the World War II period. The mandatory feature of the reports and the greater willingness of respondents to report were largely responsible for the increased coverage of all consumers in 1951, although all the primary producers reported in both 1950 and 1951. The total published recovery of copper by brass mills and secondary smelters in 1950 included estimated tonnages for those that did not report, but no such estimate was made for foundries.

The reason for the decline in recovery in 1951 was not lack of a market but lack of scrap after the establishment of price ceilings in June. If operations had been at as high a level in the last six months of 1951 as in the first six, recovery of copper by secondary smelters and brass mills would have been considerably greater in 1951 than in 1950. Secondary metal production by primary copper producers was 38 percent less in the latter half than in the first half of 1951, by the secondary smelters 21 percent less, and by the brass mills 13 percent less.

The decreased consumption of copper-base scrap and the lower secondary production by primary producers in 1950 were ascribed to the relationship between prices for virgin metals and scrap. Theoretically, establishment of ceiling prices for scrap, which took place in the middle of 1951, should have allowed each group of consumers to obtain the same proportion of the available scrap as in the period before restrictions of any kind were imposed. However, the competitive position of the primary producers, which should have been improved, deteriorated as indicated in the previous paragraph. The scarcity of scrap is also indicated in the inventory figures. Stocks of copper-base scrap held by primary producers were 57 percent less at the end of 1951 than at the beginning, those of the secondary smelters 36 percent less, those of the foundries 30 percent less, and those of the brass mills 6 percent less.

One reason for the scrap shortage was the decline in imports of copper and brass scrap to 13,315 tons in 1951 from 71,779 tons in 1950. In the absence of sta-

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Prepared by Archie J. McDermid and Helena M. Meyer, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division. December 10, 1952.

tistics on the generation of scrap, it was not clear whether lower generation or withholding of scrap by speculators, Government agencies, generators, or others, or both of these conditions were causes of the short supply. Consumers' stocks and receipts of scrap are known, but in the absence of data on generation, stocks held by others than consumers cannot be determined.

Copper recovered from scrap processed in the United States, 1950-51, in short tons

Recoverable copper content of scrap processed		
Kind of scrap	1950	1951
New scrap:		
Copper-base.........	485,054	464,226
Aluminum-base.......	6,765	9,595
Nickel-base.........	203	331
Lead-base...........	---	---
Zinc-base...........	6	6
Total...........	492,028	474,158
Old scrap		
Copper-base.........	481,449	454,447
Aluminum-base.......	2,299	2,693
Nickel-base.........	1,362	853
Lead-base...........	2	32
Tin-base............	97	97
Zinc-base...........	2	2
Total...........	485,211	458,124
Grand total......	977,239	932,282

Copper recovered from scrap processed		
Form of recovery	1950	1951
As unalloyed copper:		
At primary plants...	189,746	135,023
At other plants.....	70,958	51,439
Total...........	260,704	186,462
In brass and bronze.	679,849	702,416
In alloy iron and steel.	2,381	3,066
In aluminum alloys..	16,621	17,230
In other alloys.....	271	203
In chemical compounds	17,413	22,905
Total...........	716,535	745,820
Grand total......	977,239	932,282

Copper recovered from copper-base scrap processed, 1950,51, in short tons

	From new scrap		From old scrap		Total Copper recovered	
	1950	1951	1950	1951	1950	1951
By secondary copper smelters..	74,719	77,844	251,861	247,172	326,530	325,016
By primary copper producers...	88,298	86,345	107,143	57,491	195,441	143,836
By brass mills................	298,112	275,002	19,310	39,848	317,422	314,850
By foundries..................	23,269	23,878	93,498	99,331	116,767	123,209
By chemical plants............	656	1,157	9,637	10,605	10,293	11,762
Total..............	485,054	464,226	481,449	454,447	966,503	918,673

Analysis and production of secondary copper and copper-alloy products in the United States, 1950-51

Item produced from scrap	Approximate analysis (percent)						Gross weight produced (short tons)	
	Cu	Sn	Pb	Zn	Ni	Al	1950	1950
Unalloyed copper products:								
Refined copper (electrolytic grade)	100	--	--	--	--	--	186,122	143,520
Casting copper	99	--	--	--	--	--	20,439	12,012
Copper sheet, rod, tubing, etc.	99	--	--	--	--	--	48,421	23,576
Copper powder	98	--	--	--	--	--	4,376	3,680
Copper castings	98	--	--	--	--	--	1,346	3,674
Total							260,704	186,462
Brass and bronze ingots:								
Tin bronze	88	10	--	2	--	--	19,193	23,534
Leaded-tin bronze	88	6	1.5	4.5	--	--	18,936	25,901
Leaded red brass	85	5	5	5	--	--	125,461	123,544
Leaded semired brass	81	3	7	9	--	--	68,718	67,457
High-leaded-tin bronze	80	10	10	--	--	--	26,648	29,061
Do.	84	6	8	2	--	--	9,668	14,367
Do.	75	5	20	--	--	--	6,615	9,816
Leaded yellow brass	66	1	3	30	--	--	28,105	25,330
Manganese bronze	62	--	--	27	--	5	12,666	19,835
Aluminum bronze	89	--	--	--	--	10	5,018	5,996
Nickel silver	58	2	17	18	14	--)	4,276	3,470
Do.	65	4	3	5	22	--)		
Low brass	80	--	--	20	--	--	2,895	1,761
Silicon bronze	92	--	--	4	--	--	3,240	3,392
Conductor bronze	94	2	2	2	--	--	584	814
Hardeners and special alloys	81	--	--	--	--	--	8,664	11,476
Total 1/							340,687	365,754
Brass mill billets made by ingot makers							2,828	5,786
Brass and bronze sheet, rod, tubing, etc. 2/							418,571	424,077
Brass and bronze castings 3/							131,963	137,895
Brass powder							906	1,171
Copper in chemical products (content)							17,413	22,650

1/ Gross weight of brass and bronze ingot. Includes 276,646 tons of copper, 11,726 tons of lead, 659 tons of nickel, 10,321 tons of tin, 37,266 tons of zinc, 103 tons of aluminum, and 3,966 tons of primary metals in 1950; and 285,480 tons of copper, 12,159 tons of lead, 575 tons of nickel, 10,202 tons of tin, 38,655 tons of zinc, 121 tons of aluminum, and 18,562 tons of primary metal in 1951.

2/ Gross weight of secondary brass and bronze in commercial shapes. Includes 298,930 tons of copper, 2,904 tons of nickel, 4,646 tons of lead, 467 tons of tin, 111,499 tons of zinc, and 125 tons of aluminum in 1950; and 298,014 tons of copper, 2,340 tons of nickel, 5,060 tons of lead, 415 tons of tin, 118,203 tons of zinc, and 45 tons of aluminum in 1951.

3/ Gross weight of secondary metal in brass and bronze castings. Includes 104,709 tons of copper, 74 tons of nickel, 13,735 tons of lead, 5,591 tons of tin, 7,812 tons of zinc, and 42 tons of aluminum in 1950; and 108,617 tons of copper, 15,146 tons of lead, 5,525 tons of tin, 8,545 tons of zinc, 47 tons of aluminum, and 15 tons of nickel in 1951.

Stocks and consumption of new and old copper scrap at secondary smelters in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
No. 1 wire and heavy.....	2,029	40,518	2,213	39,092	41,305	1,242
No. 2 wire, mixed heavy, and light.........	3,711	61,342	4,701	58,345	63,046	2,007
Composition or red brass.	5,664	108,791	52,866	59,284	112,150	2,305
Railroad-car boxes........	170	535	----	636	636	69
Yellow brass..............	5,970	79,878	17,274	65,193	82,467	3,381
Cartridge cases...........	379	2,489	16	2,731	2,747	121
Auto radiators (unsweated)...............	2,580	52,236	----	53,411	53,411	1,405
Bronze....................	1,468	32,028	5,702	26,809	32,511	985
Nickel silver.............	853	3,695	270	3,794	4,064	484
Low brass.................	172	2,862	2,660	261	2,921	113
Aluminum bronze...........	158	937	60	828	888	207
Low-grade scrap and residues...............	6,065	62,458	39,608	22,552	62,160	6,363
Total...............	29,219	447,769	125,370	332,936	458,306	18,682

Stocks and consumption of new and old copper scrap at brass mills in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
No.1 wire and heavy......	1,073	34,139	26,989	7,038	34,027	1,185
No. 2 wire, mixed heavy and light.........	1,983	32,604	27,302	6,684	33,986	601
Yellow brass..............	11,028	310,959	311,803	1,853	313,656	8,331
Cartridge cases...........	854	38,650	----	35,688	35,688	3,816
Bronze....................	82	1,435	1,379	----	1,379	138
Nickel silver.............	723	10,917	10,657	98	10,755	885
Low brass.................	532	18,449	18,213	384	18,597	384
Aluminum bronze...........	65	415	413	----	413	67
Total...............	16,340	447,568	396,756	51,745	448,501	15,407

Stocks and consumption of new and old copper scrap at foundries, chemical plants, and other manufacturers in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
No. 1 wire and heavy.....	3,097	21,011	6,579	15,972	22,551	1,557
No. 2 wire, mixed heavy and light.........	2,006	11,919	3,790	8,572	12,362	1,563
Composition or red brass.	2,870	33,969	12,731	21,326	34,057	2,782
Railroad-car boxes.......	5,094	69,212	---	71,761	71,761	2,545
Yellow brass............	1,935	14,927	6,426	9,068	15,494	1,368
Cartridge cases..........	372	- 155	---	215	215	2
Auto radiators (unsweated)............	6	715	---	685	685	36
Bronze...................	1,750	10,767	648	10,058	10,706	1,811
Nickel silver............	14	93	68	27	95	12
Low brass................	345	2,342	541	1,899	2,440	247
Aluminum bronze..........	192	755	300	247	547	400
Low-grade scrap and residues...............	165	2,388	---	2,305	2,305	248
Total...............	17,846	167,943	1/31,083	1/142,135	1/173,218	12,571

1/ Of the totals shown, chemical plants reported the following; Unalloyed copper scrap, 1,273 tons of new and 10,815 tons of old; copper-base alloy scrap, 0 tons of new and 470 tons of old.

Stocks and consumption of new and old copper scrap at plants of primary producers in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
Unalloyed copper scrap...	2,622	84,266	63,577	20,853	84,430	2,458
Refinery brass...........	12,502	34,275	13,759	26,638	40,397	6,380
Low-grade scrap and residues...............	27,288	98,831	50,462	66,225	116,687	9,432
Total...............	42,412	217,372	127,798	113,716	241,514	18,270

Consumption of copper and brass materials, by principal consuming groups, 1950-51, in short tons

Item consumed	Primary producers	Brass mills	Wire mills	Foundries and other manufacturers	Secondary smelters
1950					
Copper-base scrap..........	385,660	446,987	---	151,124	446,664
Primary material...........	1/1,239,834	---	---	---	---
Refined copper.............	---	675,100	713,354	26,649	6,209
Brass ingot................	---	1,936	1,834	343,428	---
Slab zinc..................	---	129,535	---	---	---
Miscellaneous..............	---	1,193	---	---	16,143
1951					
Copper-base scrap..........	241,514	448,501	---	160,660	458,306
Primary material...........	1/1,206,938	---	---	---	---
Refined....................	---	650,967	710,199	38,732	13,744
Brass ingot................	---	7,815	842	355,020	---
Slab zinc..................	---	129,798	---	---	---
Miscellaneous..............	---	559	---	---	20,744

1/ Recoverable copper content, gross weight not available.

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MINERAL MARKET REPORT
MMS NO. 2123

PHOSPHATE ROCK INDUSTRY OF THE UNITED STATES IN FIRST HALF OF 1952

Total mine production of phosphate rock in the first half of 1952, according to reports of producers to the Bureau of Mines, Department of the Interior, increased to 5,773,922 long tons, a rise of nearly 9 percent above the corresponding period of 1951. Phosphate rock sold or used in the first half of 1952 was 5,670,752 long tons, 112,249 tons greater than for the first half of 1951. Producers stocks as reported were 1,833,000 tons, the smallest since 1949. The total value rose nearly 2 million dollars above that of January-June 1951 with the average value rising to $6.18.

Phosphate rock was mined in Florida, Tennessee, Idaho, Montana, Utah, and Wyoming during the first 6 months of 1952. Florida continues to be the leading shipper with an increase of more than 200,000 long tons, and total shipments more than 4 times those of Tennessee and the Western States combined. Shipments of land pebble and hard rock increased while those of soft rock were less in January-June 1952. The total value of all kinds of Florida rock was greater in this period. The quantity of Tennessee phosphate rock sold or used in the first half of 1952 was 9 percent less than in the similar period of 1951. Both total and average values were also less in the first 6 months of 1952. Total production from the Western States decreased 9 percent as compared to the January-June 1951 period. The value of Western rock increased.

Prepared by E. Robert Ruhlman and G. E. Tucker, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, December 1952.

Salient statistics of the phosphate rock industry in the United States,
January - June, 1951 and 1952

	1951				1952			
	Long tons		Value at mines		Long tons		Value at mines	
	Phosphate rock	P_2O_5 content	Total	Average	Phosphate rock	P_2O_5 content	Total	Average
Production (mined)--------	5,261,551	1,693,350	(1/)	(1/)	5,733,922	1,859,909	(1/)	(1/)
Sold or used by producers:								
Florida:								
Land pebble-----------	4,285,677	1,452,722	$25,318,770	$5.91	4,504,050	1,515,136	$26,928,443	$5.98
Soft rock-------------	43,896	8,984	208,814	4.76	42,060	8,690	238,061	5.66
Hard rock-------------	39,734	14,002	305,603	7.69	40,702	14,343	313,815	7.71
Total Florida-------	4,369,307	1,475,708	25,833,187	5.91	4,586,812	1,538,169	27,480,319	5.99
Tennessee 2/------------	747,562	204,386	5,517,803	7.38	682,834	185,085	5,028,824	7.36
Idaho-------------------	441,634	129,801	2,001,179	4.53	170,549	52,024	886,670	5.20
Montana and Wyoming 3/--					230,557	68,003	1,662,634	7.21
Total United States-	5,558,503	1,809,895	33,352,169	6.00	5,670,752	1,843,281	35,058,447	6.18
Stocks in producers' hands June 30:								
Florida-----------------	920,000	307,000	(1/)	(1/)	1,061,000	351,000	(1/)	(1/)
Tennessee 2/ 4/---------	561,000	160,000	(1/)	(1/)	507,000	140,000	(1/)	(1/)
Western States----------	442,000	118,000	(1/)	(1/)	265,000	71,000	(1/)	(1/)
Total stocks---------	1,923,000	585,000	(1/)	(1/)	1,833,000	562,000	(1/)	(1/)

1/ Data not available.
2/ Includes brown-rock matrix of sinter-grade and sintered brown rock.
3/ Includes Utah in 1952.
4/ Excludes plant stocks of washer-grade matrix.

Interior Duplicating Section, Washington, D. C.

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MINERAL MARKET REPORT
MMS No. 2125

MAGNESITE AND OTHER MAGNESIUM COMPOUNDS - 1951

Domestic production of crude magnesite, caustic-calcined and refractory magnesia, and dead-burned dolomite all increased greatly during 1951 as a result of continued steel industry expansion. The production of crude magnesite was second only to the record war year of 1943. Refractory magnesia and dead-burned dolomite productions were all-time highs. Other magnesium compounds, notably magnesium chloride, also recorded increased production.

Salient statistics of magnesite, magnesia, and dead-burned dolomite in the United States, 1948-51

	1948	1949	1950	1951
Crude magnesite:				
Mined:				
Short tons	(1/)	287,315	429,392	670,167
Value 2/	(1/)	$1,950,153	$3,091,135	$4,506,712
Caustic-calcined magnesia:				
Sold or used by producers:				
Short tons	33,209	32,505	41,447	49,981
Value	$3,380,528	$3,109,381	$4,136,898	$4,810,379
Average per ton 3/	$101.80	$95.66	$99.81	$96.24
Refractory magnesia:				
Sold or used by producers:				
Short tons	330,069	250,389	335,440	432,197
Value	$13,444,587	$10,477,856	$14,915,854	$18,400,131
Average per ton 3/	$40.73	$41.85	$44.47	$42.57
Dead-burned dolomite:				
Sold by producers:				
Short tons	1,544,755	1,318,708	1,759,443	1,966,460
Value	$17,847,182	$15,930,226	$21,725,560	$26,375,313

1/ Bureau of Mines not at liberty to publish figure.
2/ Partly estimated; most of crude is processed by mining companies, and very little enters open market.
3/ Average receipts f.o.b. mine shipping point.

Prepared by Donald R. Irving and F. P. Uswald under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, December 1952.

Sources from which magnesia is derived are shown in the following table:

Magnesia sold or used by producers in the United States, 1950-51, by kinds and sources

Magnesia	From magnesite, brucite, and dolomite 1/		From well brines, raw sea water, and sea-water bitterns 1/		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1950						
Caustic-calcined...	6,418	740,369	35,029	3,396,529	41,447	4,136,898
Refractory.........	232,283	9,358,483	103,157	5,557,371	335,440	14,915,854
Total..........	238,701	10,098,852	138,186	8,953,900	376,887	19,052,752
1951						
Caustic-calcined...	7,689	889,624	42,292	3,920,755	49,981	4,810,379
Refractory.........	295,243	10,610,788	136,954	7,789,343	432,197	18,400,131
Total..........	302,932	11,500,412	179,246	11,710,098	482,178	23,210,510

1/ Magnesia made from a combination of dolomite and sea water is included with that from sea water.

Other Magnesium Compounds

Production and sales of heavy magnesias and precipitated magnesium carbonate increased over 1950. Both production and sales of light magnesias decreased in the same period. A substantial increase in production of magnesium chloride was necessary to supply increased demand from the magnesium metal industry.

Specified magnesium compounds produced, sold, and used by producers in the United States, 1950-51

Products 1/	Plants 1/	Produced (short tons)	Sold 2/		Used (short tons)
			Short tons	Value	
1950					
Specified magnesias (basis 100 percent MgO) U.S.P. and Technical:					
Extra-light and light.........	5	2,480	2,392	1,214,844	------
Heavy........................	3	1,850	1,734	513,586	(3/)
Total........................	4/ 5	-----	4,126	1,728,430	(3/)
Precipitated magnesium carbonate..	10	54,633	7,389	1,134,499	47,153
1951					
Specified magnesias (basis 100 percent MgO) U.S.P. and technical:					
Extra-light and light.........	5	2,251	2,221	1,114,037	(3/)
Heavy........................	2	(3/)	(3/)	(3/)	------
Total........................	4/ 5	-------	(3/)	(3/)	(3/)
Precipitated magnesium carbonate..	10	60,530	8,415	1,177,999	51,987

1/ In addition, in 1950-51, magnesium chloride, hydroxide, nitrate, phosphate, and sulfate were produced. Bureau of Mines not at liberty to publish figures.
2/ Sales by producer to an affiliated consumer for immediate use are not included with "Sold" but with "Used".
3/ Bureau of Mines not at liberty to publish figures.
4/ A plant producing more than 1 grade is counted but once in arriving at total.

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MINERAL MARKET REPORTS
MMS NO. 2113

TITANIUM IN 1951

The titanium pigment industry continued to establish new records in 1951 with an increase in titanium pigment production of five percent and in shipments of two percent over the previous records set in 1950. This industry continued to consume about 99 percent of the ilmenite produced in 1951; the other one percent was used in making titanium alloys, carbide, and welding-rod coatings. About 75 percent of the titanium pigment produced in 1951 was consumed in the paint, enamel, and lacquer industries, with the remainder going into paper, rubber, floor coverings, coated fabrics, textiles, printing ink and miscellaneous use. In 1951, the titanium industry included four companies that operated seven pigment plants and five titanium ore mines.

Commercial ductile titanium sponge metal produced in 1951 totaled 495 short tons and came from plants operated by E. I. DuPont de Nemours at Newport, Delaware; Titanium Metals Corporation of America at Sayreville, New Jersey; Niagara Falls, New York; Henderson, Nevada; and leased facilities at the Bureau of Mines pilot-plant, Boulder City, Nevada; and the Crane Company, Chicago, Illinois. The price of titanium sponge metal (99.3 percent Ti) in 1951, produced commercially pure by modifications of the Kroll process, was quoted by E. I. DuPont de Nemours and Company, Wilmington, Delaware, at $7.50 per pound in quantities less than 100 pounds and $5 a pound in quantities of 100 pounds or more, all prices f.o.b. shipping point. Titanium Metals Corporation of America, New York, announced the following prices for titanium milled products, commercially pure and alloy grades, base prices per pound in lots of 10,000 pounds and over, f.o.b. mill: hot and cold-rolled sheets, $15, Brackenridge, Pennsylvania; hot-rolled sheared mill plate, $12, Brackenridge; cold-rolled strip, $15, West Leechburg, Pennsylvania; rolled or cold-drawn bar in small diameters and round wire, $10, Dunkirk, New York; forgings (rounds, disks, and round-cornered squares), $6, Watervliet, New York; hot-rolled bars (rounds, flats, and squares), $6, Watervliet. The Foote Mineral Company, Philadelphia, Pennsylvania, and the New Jersey Zinc Company, Palmerton, Pennsylvania, produced small quantities of high purity (99.99 percent Ti) titanium metal, by the iodide process, in 1951. The Foote Mineral Company offered for research purposes pure titanium crystal bar, approximately ½ inch diameter by 19 inches maximum length, at $95 per pound in lots of 100 pounds and up and $125 per pound in lots less than 100 pounds, f.o.b. Exton, Pennsylvania.

Metal Hydrides, Incorporated, Beverly, Massachusetts, produced 144,271 pounds of titanium powder, 96 to 98 (plus) percent Ti, in 1951 by reduction of titanium oxide with calcium hydride. The price of titanium powder 96, 97, 98.5 percent Ti, was quoted in the American Metal Market during 1951 at $5, $6, and $7 a pound, respectively, f.o.b. Beverly, Massachusetts.

Prepared by A. F. Turin, under supervision of F. J. Cservenyak, Chief, Light Metals Branch, Minerals Division.

Interest in titanium metal increased as new titanium organizations were formed in 1951. The National Research Corporation of Cambridge, Massachusetts, and Monsanto Chemical Company joined forces to develop an improved process for the production of titanium. P. R. Mallory and Company and the Sharon Steel Corporation formed the Mallory-Sharon Titanium Corporation for the development, production, and marketing of titanium and titanium alloys. A new process for producing titanium metal was under investigation by Horizon Titanium Corporation, a new firm formed by Horizons, Incorporated, of Princeton, New Jersey, with the backing of Ferro Incorporated, of Cleveland, Ohio, and others.

Production and Shipments. - Ilmenite production and shipments in 1951 totaled 535,835 and 510,840 short tons, respectively, an increase of 14 and 13 percent above production and shipments for 1950. This increase established new records in ilmenite production and shipments for the fifth successive year. Ilmenite in 1951, as in 1950, included a quantity of mixed product containing altered ilmenite, leucoxene, and rutile. The mixed product was used in the manufacture of titanium pigments and metal. Ilmenite shipments in 1951 ranged from 45 to 60 percent TiO_2; rutile shipments averaged 93 percent TiO_2. Ilmenite was recovered for the first time in Idaho as a by-product from monazite operations. New York continued to supply more than one half of the ilmenite produced, Florida about one-third, and the remainder came from Idaho, North Carolina and Virginia; whereas, rutile was mined only in Florida in 1951.

Production and shipments of titanium pigments in 1951 increased five and two percent, respectively, above 1950, and established another new peak. Figures on the production and shipments of titanium pigments are supplied in confidence and consequently are not published.

Production and shipments of ilmenite in the United States, 1947-51.

Year	Production (Short tons)	Shipments: Gross weight (Short tons)	Shipments: TiO_2 content (Short tons)	Shipments: Value
1947	336,533	336,061	157,328	$ 5,029,490
1948	383,745	381,508	177,447	5,793,973
1949	402,334	389,234	186,535	6,212,348
1950	1/ 468,320	1/ 452,370	1/ 230,826	5,606,584
1951	1/ 535,835	1/ 510,840	1/ 261,982	7,689,272

1/ Includes a mixed product containing altered ilmenite, leucoxene, and rutile.

Production and shipments of rutile in the United States, 1947-51.

Year	Production (Short tons)	Shipments: Gross weight (Short tons)	Shipments: TiO_2 content (Short tons)	Shipments: Value
1947	8,562	5,157	4,813	$ 533,548
1948	7,380	9,907	9,226	647,334
1949	1/ 11,988	1/ 10,559	1/ 9,414	489,798
1950	2/	2/	2/	2/
1951	2/	2/	2/	2/

1/ Includes a mixed product containing altered ilmenite, leucoxene, and rutile.
2/ Bureau of Mines not at liberty to publish.

Consumption. - Ilmenite consumption in 1951 increased 5 percent, over the previous year, establishing a record of 713,363 short tons, and more than doubled the quantity of ilmenite consumed in 1943 of 302,822 short tons. Rutile consumption of 17,227 short tons in 1951 increased 47 percent over 1950 and almost equalled the record set in 1943 of 17,634 short tons. Titanium metal and fiberglass were reported as new uses for rutile. Rutile was consumed mainly in welding-rod coatings whereas titanium pigments continued to be the chief use of ilmenite.

Consumption of ilmenite and rutile in the United States, 1947-49 (total) and 1950-51, by products, in short tons.

Product	Ilmenite		Rutile	
	Gross Weight	Estimated TiO_2 content	Gross Weight	Estimated TiO_2 content
1947	479,524	250,859	7,692	7,083
1948	565,000	300,408	10,230	9,488
1949	510,608	263,000	3/ 11,888	3/10,863
1950:				
Pigments (manufactured titanium dioxide) 1/3/	671,335	347,747	(2)	(2)
Welding-rod coatings 1/	210	106	9,218	8,516
Alloys and carbide	7,666	3,803	1,454	1,366
Ceramics	---	---	195	185
Miscellaneous	33	19	854	802
Total consumption	679,244	351,675	11,721	10,869
1951:				
Pigments (manufactured titanium dioxide) 1/3/	703,068	367,937	(2)	(2)
Welding-rod coatings 1/	258	130	11,708	10,834
Alloys and carbide	10,024	4,962	2,939	2,752
Ceramics	---	---	265	248
Miscellaneous	13	8	4/ 2,315	4/ 2,184
Total consumption	713,363	373,037	17,227	16,018

1/ "Pigments" include all manufactured titanium dioxide, consumption of which in welding-rod coatings was 1,082 tons in 1949, 1,439 tons in 1950, 1,770 tons in 1951.

2/ Included in "Miscellaneous," in order to avoid disclosure of individual company operations.

3/ Includes a mixed product containing altered ilmenite, leucoxene, and rutile used to make pigments and metal.

4/ Includes metal and fiberglass.

Stocks - Inventories of ilmenite decreased slightly in 1951 and were equivalent (TiO_2 content basis) to about 11 months' requirements at the record rate of consumption in 1951. Rutile stocks dropped 24 percent in 1951 and would sustain industry (TiO_2 content basis) at the 1951 rate of use for four months. Significant decreases in year-end stocks of rutile were reported by some welding-rod coatings alloys and carbide producers.

Stocks of titanium concentrates in the United States at end of year,
1950 - 1951, in short tons.

Stocks	1950[1]				1951			
	Ilmenite		Rutile		Ilmenite		Rutile	
	Gross weight	Estimated TiO_2 content	Gross weight	Estimated TiO_2 content	Gross weight	Estimated TiO_2 content	Gross weight	Estimated TiO_2 content
Mine........	32,848	15,216	3,780	3,516	57,843	26,349	50	47
Distributors[2]...	169	101	1,799	1,713	692	415	577	547
Consumers.......	649,200	318,894	2,750	2,559	620,948	308,007	5,685	5,331
Total stocks....	682,217	334,211	8,329	7,788	679,483	334,771	6,312	5,925

[1]/Revised figures reflecting inventory corrections reported by industry.
[2]/Includes ilmenite and rutile content of mixed zirconium-titanium concentrates.

Titanium Mineral Prices - Quotations in E & MJ Metal and Mineral Markets for 1951, per gross ton for ilmenite, containing 56-59 percent TiO_2, f.o.b. Atlantic seaboard, according to grade and impurities, were \$14 - \$16 at the beginning of 1951 and increased to \$15 - \$17 in January, and \$16 - \$18 in February, at which level they remained for the rest of the year. Quotations were nominal. Nominal quotations for rutile concentrates, guaranteed minimum 94 percent TiO_2, were 3 1/2 - 4 1/2 cents per pound until the end of November when there was in increase to 5 1/4 - 6 1/4 cents per pound. Rutile was under coverage of General Ceiling Price Regulation, January 27, 1951, which established ceiling prices based upon the prices in effect during the period, December 19, 1950 to January 25, 1951. The year closed with a ceiling price for rutile concentrate averaging about \$100 per ton at East Coast ports.

Imports of Ilmenite and Rutile - Receipts of ilmenite in 1951 were 189,078 short tons, 13 percent less than the 1950 total, and 42 percent less than the record established in 1949; this is the lowest since the 1944 total of 104,884 tons. Imports from India, the dominant source, dropped slightly. Canadian imports, containing mostly titanium slag, increased 178 percent. Norway, the second major source of ilmenite in 1950, did not supply any ilmenite to the United States in 1951. All imports of rutile were from Australia for the fourth successive year. Rutile imports for 1951 were 11,023 short tons, an increase of 222 percent above 1950. The 1951 total was the largest since 1947 when 12,637 tons was imported. Ilmenite and rutile remained free of tariff duties in 1951

Titanium concentrates1/ imported for consumption in the United States, 1946 - 1951, by countries, in short tons

(U. S. Department of Commerce)

Country of origin	1946	1947	1948	1949	1950	1951
Ilmenite						
Australia2/....	-	1,659	(3)	-	112	100
Brazil........	2	1	8,708	-	-	1
Canada........	1,250	7,122	4,519	540	1,357	4/3,776
Ceylon........	-	-	-	2	-	-
Egypt........	-	-	-	721	-	-
France........	-	-	-	-	1	-
India.........	218,623	262,503	184,309	289,739	187,834	185,145
Malaya........	-	-	3,335	-	-	56
Norway........	21,077	30,026	41,243	33,155	27,155	-
Total as reported....	240,952	301,311	242,119	324,157	216,459	189,078
Australia:						
In "zirconium ore"2/.......	1,388	-	-	-	-	-
Grand total..	242,340	301,311	242,119	324,157	216,459	189,078
Value of "as reported"...	$1,440,112	$1,791,020	$1,758,848	$2,479,071	$1,198,545	$1,323,438
Rutile						
Australia2/....	4,377	7,460	8,771	3,085	3,427	11,023
Brazil........	31	-	-	-	-	-
French Cameroon	-	3	-	-	-	-
India.........	-	113	-	-	-	-
Norway........	-	-	(3)	-	-	-
Total as reported....	4,408	7,576	8,771	3,085	3,427	11,023
Australia:2/						
In "zirconium ore"........	1,456	-	-	-	-	-
In "ilmenite"	-	5,061	-	-	-	-
Grand total..	5,864	12,637	8,771	3,085	3,427	11,023
Value of "as reported"...	$213,795	$468,810	$588,713	$179,746	$149,733	$491,383

1/Classified as "ore" by the U. S. Department of Commerce.

2/Most of the imports of titanium from Australia in 1940 - 47 were in mixed zircon-rutile-ilmenite concentrates which were included as ilmenite, rutile and zirconium ore in U. S. Department of Commerce figures. The quantities reported by the U. S. Department of Commerce have been adjusted to reflect percentage content of each item based on reports to the Bureau of Mines from importers.

3/Less than 0.5 ton.

4/Includes titanium slag containing approximately 70 percent TiO_2.

World production of titanium concentrates (ilmenite and rutile), by countries, in metric tons, 1945-51

(Compiled by Pauline Roberts)

Country	1945	1946	1947	1948	1949	1950	1951
Ilmenite							
Australia 1/	2/ 8,494	2/ 6,716	2/ 10,475	2/ 11,756	2/ 10,839	2/ 12,417	(3)
Brazil	4/ 5,000	---	---	4/ 7,900	650	---	(3)
Canada	12,834	1,275	6,445	4,029	490	5/ 3,177	5/ 19,235
Egypt	46	146	---	1,601	635	260	317
India	174,848	187,993	265,143	233,098	2/313,126	216,076	143,174
Malaya	---	---	4/ 13,291	12,909	20,034	25,315	4/ 42,341
Norway	28,312	52,574	69,711	90,017	99,013	105,000	105,000
Portugal	301	633	243	155	680	47	34
Senegal	3,200	4,191	11,282	3,690	8,338	2/ 540	2,500
Spain	216	128	150	181	376	2/ 637	700
United States	279,880	256,230	305,296	348,126	364,989	424,851	486,099
Total ilmenite	2/513,000	2/509,886	2/682,036	2/713,500	2/819,170	788,000	6/800,000
Futile							
Australia 7/	9,901	8,283	13,406	2/ 15,348	2/ 14,206	2/ 18,379	33,718
Brazil	4/ 160	4/ 28	4/ 5	---	---	(8)	(3)
French Cameroon	1,440	1,260	755	576	403	25	(3)
French Equatorial Africa	---	---	---	---	---	6	(3)
India	620	262	160	129	---	(8)	(3)
Norway	76	63	51	---	16	(8)	(3)
Senegal	----	---	-----	---	-----	-----	(8)
United States	6,513	6,761	7,767	6,695	10,875	(9)	(9)
Total rutile	18,710	16,657	22,144	2/ 22,748	2/ 25,500	2/ 25,320	6/ 42,000

1/Estimated ilmenite content of all ilmenite-bearing concentrates.
2/Revised figures.
3/Data not available, estimate included in total.
4/Exports.
5/Includes titanium slag containing approximately 70 percent TiO_2: see Canada under World Review.
6/Estimate.
7/Estimated rutile content of all rutile-bearing concentrates.
8/Figure withheld in order to avoid disclosure of U.S. production by differences: see footnote nine.
9/Figure withheld in order to avoid disclosure of individual company operation.

World Highlights - Quebec Iron & Titanium Corporation, owned jointly by the Kennecott Copper Corporation and New Jersey Zinc Company, mined and crushed 342,000 long tons of iron-titanium ore during the mining and shipping seasons in 1951, which began in April and ended in November. Titanium slag production and shipments in 1951, averaging 70 percent TiO_2, totaled 17,438 and 7,176 long tons, respectively. There were no shipments of titanium slag in 1950; however, 7,076 long tons was shipped in 1951 to the United States for consumption by the pigment industry; the other 100 tons was shipped to England. Since initial production of titanium slag at Sorel, Quebec, in October 1950 to the end of 1951, some 473,000 long tons of titaniferous ore was delivered from the Quebec Iron & Titanium Corporation mine at Allard Lake, Quebec, to smelter stockpiles at Sorel. From this stockpile a total of 46,676 long tons of titaniferous ore was treated, resulting in the production of 16,555 long tons of iron, and 19,446 long tons of titanium slag.

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
OSCAR L. CHAPMAN, Secretary J.J. FORBES, Director

FOR IMMEDIATE RELEASE

MINERAL MARKET REPORT
MMS NO. 2114

TALC, PYROPHYLLITE, AND GROUND SOAPSTONE INDUSTRIES OF THE UNITED STATES IN 1951 [1]

General Conditions

Increases occurred in 1951 in the combined mine production of talc, pyrophyllite, and ground soapstone, and in the quantity and value of these commodities sold or used, over similar data for 1950, according to reports by producers to the Bureau of Mines, United States Department of the Interior. Total imports were less in quantity but higher in value in 1951 than in 1950. Exports of crude and ground talc, steatite, soapstone, and pyrophyllite, were greater in quantity and value in 1951. Exports of talcum powders rose considerably in total value.

New York was still the leading producer in 1951, by a large margin. California was second, and North Carolina third. Sales in California, Georgia, Maryland-Virginia, and Vermont were higher in 1951 than in 1950. Sales of pyrophyllite increased slightly in 1951 over 1950.

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[1] Soapstone sold in slabs or blocks is not included.

Prepared by Bertrand L. Johnson and F. P. Uswald, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, December 1952.

TABLE 1.- Salient statistics of the talc, pyrophyllite, and ground soapstone industries in the United States, 1950-51

	1950		1951	
	Short tons	Value	Short tons	Value
Mined..........................	616,680	1/	640,456	1/
Used by producers..............	564,067	1/	570,821	1/
Sold by producers:				
Crude..........................	58,136	$517,941	71,581	$642,780
Sawed and manufactured.........	805	312,776	1,097	375,141
Ground 2/......................	561,809	9,790,026	563,390	10,304,909
Total sales..............	620,750	10,620,743	636,068	11,322,830
Imports for consumption: 3/				
Crude and unground.............	177	10,052	109	20,326
Cut and sawed..................	156	44,364	127	42,033
Ground, washed, or pulverized..	23,054	637,262	20,404	631,707
Total imports............	23,387	691,678	20,640	694,066
Exports:				
Talc, steatite, soapstone, and pyrophyllite, crude and ground 4/	20,644	586,244	23,009	705,805
Powder-talcum (in packages), face, and compact...........	1/	1,234,318	1/	1,463,010
Total exports..........	-------	1,820,562	-------	2,168,815

1/ Figure not available.
2/ Includes some crushed material.
3/ Exclusive of "Manufactures, n.s.p.f. (not specially provided for), except toilet preparations," as follows: 1950: $2,178. Quantities not available.
4/ Includes manufactures, n.e.s.

PRODUCTION AND SALES

Both quantity and value of domestic talc, pyrophyllite, and ground soapstone sold or used in 1951 (636,068 short tons valued at $11,322,830) were higher than in 1950, and constitute new all-time records.

TABLE 2.- Talc, pyrophyllite, and ground soapstone, sold by producers in the United States, 1949-51, by States

State	1949		1950		1951	
	Short tons	Value	Short tons	Value	Short tons	Value
California............	83,359	$1,434,046	109,747	$2,069,211	126,784	$2,269,771
Georgia................	49,338	580,405	70,749	774,148	77,895	823,133
Maryland and Virginia..	32,256	268,423	41,206	355,075	45,399	431,579
Nevada.................	8,837	147,148	8,581	170,736	6,919	152,878
New York...............	115,636	2,658,774	163,974	4,039,973	152,652	4,170,987
North Carolina.........	86,208	1,344,767	116,895	1,855,163	113,950	1,982,927
Vermont................	64,508	788,341	72,135	906,396	78,694	998,792
Other States 1/........	21,754	301,574	37,463	450,041	33,775	492,763
Total..............	461,896	7,523,478	620,750	10,620,743	636,068	11,322,830

1/ Includes Montana, Texas, and Washington.

TABLE 3.- Pyrophyllite 1/produced and sold by producers in the United States, 1947-51

Year	Production (short tons)	Sales					
		Crude		Ground		Total	
		Short tons	Value	Short tons	Value	Short tons	Value
1947.........	108,450	6,204	27,626	97,536	1,135,100	103,740	1,162,726
1948.........	107,885	5,175	25,766	102,152	1,313,266	107,327	1,339,032
1949.........	90,920	5,927	31,489	82,934	1,070,838	88,861	1,102,327
1950.........	116,800	5,690	30,016	112,119	1,504,141	117,809	1,534,157
1951.........	120,031	4,446	23,741	114,398	1,664,058	118,844	1,687,799

1/ Exclusive of pinite.

MARKETS

Six industries - ceramics, paint, insecticides, rubber, roofing, and paper - consumed 86 percent of the sales of domestically produced talc, pyrophyllite, and ground soapstone in 1951, according to reports from the producers. Increases over 1950 occurred in the ceramics, insecticides, and roofing industries. The leading industry was ceramics which took 27 percent of the total against 24 percent in 1950. The paint industry, which took only 19 percent in 1951 against 23 percent in 1950 was its nearest competitor.

TABLE 4.- Talc, pyrophyllite, and ground soapstone sold by producers in the United States, 1949-51, by uses 1/

Use	1949		1950		1951	
	Short tons	Percent of total	Short tons	Percent of total	Short tons	Percent of total
Paint	100,000	22	145,000	23	122,557	19
Ceramics	94,700	20	148,500	24	170,521	27
Rubber	53,400	12	75,900	12	70,970	11
Insecticides	61,100 2/	13	77,000	12	90,418	14
Roofing	44,200	10	55,400	9	64,768	10
Paper	25,300	5	29,600	5	27,974	5
Toilet preparations	8,400	2	11,700	2	7,946	1
Foundry facings	5,300 2/	1	7,800	1	7,986	1
Crayons	560	3/	600	3/	738	3/
Other uses 4/	47,300	10	48,000	8	56,675	9
Unclassified	21,536 2/	5	21,250	4	15,515	3
Total	461,896	100	620,750	100	636,068	100

1/ Partly estimated.
2/ Revised figure.
3/ Less than 0.5 percent.
4/ Refractory, textile, asphalt filler, plaster, and miscellaneous other uses.

TABLE 5.- World production of talc, pyrophyllite, and soapstone, by countries, 1/ 1946-51, in metric tons
(Compiled by Helen L. Hunt)

Country 1/	1946	1947	1948	1949	1950	1951
Argentina	3,760	(2)	(2)	(2)	(2)	(2)
Australia	5,838	5,929	6,198	8,717	3/ 9,851	11,987
Austria	21,600	24,500	47,300	52,144	53,625	66,574
Brazil	4,183	9,500	10,743	7,221	(2)	(2)
Canada (Shipments)	27,288	24,450	26,109	24,423	3/ 29,578	26,478
Chile	640	1,085	270	110	142	(2)
Egypt	4,760	4,630	5,521	5,573	3,731	3,754
Finland	300	(2)	237	(2)	4,000	(2)
France	63,350	69,785	91,520	99,650	95,500	120,000
Germany, West	13,800	4/ 20,484	5/ 28,214	30,968	13,314	19,500
Greece	500	200	1,800	1,700	2,500	2,623
India	96,220	20,823	3/ 18,386	21,535	25,894	32,314
Italy	36,356	50,260	70,139	60,210	3/ 67,616	75,827
Japan	111,562	183,129	243,737	262,433	283,566	400,626
Kenya	490	297	322	590	334	337
Korea, Republic of	300	700	72	2,773	(2)	(2)
Norway	3/ 42,316	3/ 54,623	3/ 57,226	3/ 53,993	3/ 64,099	60,000
Rumania	267	(2)	(2)	(2)	(2)	(2)
Spain 6/	30,665	31,616	29,984	38,208	25,131	36,034
Sweden	14,010	10,710	11,703	11,293	13,843	(2)
Union of South Africa	3,680	2,700	4,897	5,386	3,978	5,663
United Kingdom	3,437	3,379	4,000	2,616	(2)	(2)
United States 7/	414,641	468,190	470,596	419,023	563,132	577,028
Uruguay	1,818	2,675	2,984	660	681	959
Total (estimate) 1/	3/ 960,000	3/1,060,000	1,200,000	3/ 1,180,000	3/ 1,340,000	1,550,000

(Footnotes on next page)

(Footnotes for table 5.)

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1 In addition to countries listed, talc or pyrophyllite is reported in Afghanistan, China, Portugal, and U.S.S.R., but data on production are not available; and estimates have been included in total.
2/ Data not available; estimate by author of chapter included in total.
3/ Revised figure.
4/ American zone only.
5/ Bizonal area.
6/ Includes steatite as follows: 1946: 19,541; 1947: 20,835; 1948: 18,627; 1949: 20,880; 1950: 13,702; 1951: 22,628.
7/ Talc, pyrophyllite, pinite, and ground soapstone sold by producers. (No pinite sold by producers in 1949, 1950 or 1951.)

Foreign Minerals Statistics Unit, Region IX, Bureau of Mines, October 15, 1952.

32703 Interior Duplicating, Washington, D. C.

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UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

For immediate release

MINERAL MARKET REPORT
M.M.S. NO. 2120

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE.

SECONDARY MAGNESIUM IN 1951

Secondary magnesium recovered from scrap in 1951 totaled 9,229 short tons valued at 4,522,210 compared with 7,740 tons valued at $3,410,244 in 1950, according to the Bureau of Mines, United States Department of the Interior. Primary production in 1951 was 40,881 tons. Of this a little over half was produced at the Dow Chemical Company's Freeport, Texas plant, and the remainder at six Government-owned plants which were reactivated during the year.

Magnesium scrap consumption increased from 8,367 tons in 1950 to 10,388 tons in 1951, or 24 percent. Consumption of primary magnesium and magnesium content of primary alloy rose from 18,051 tons in 1950 to 35,710 in 1951 or 98 percent. It would seem that the increased use of primary material in 1951 would have been reflected in increased consumption of process scrap to a greater degree than reported. However, most of the Government-owned plants did not attain full production until late in the year so that most of the scrap generated by fabricators in processing ingot received from the Government-owned plants and processed for defense in 1951 did not return to remelters before 1952. Two-thirds of the total scrap used in both 1950 and 1951 was consumed by five large companies, all of which operated smelters and some of which operated foundries and fabricating plants as well.

Small foundries can use their magnesium home scrap, but it is not practicable for them to use purchased scrap unless they know the composition because, unlike brass scrap, its composition cannot be identified by its color, but must be determined by laboratory analysis. It is more economical for such plants to buy ingot of specified composition than to mix and analyze their own alloys.

Foundries used about 3,000 tons of primary unalloyed magnesium ingot, 10,000 tons of primary magnesium alloy ingot, 4,000 tons of secondary magnesium ingot and 2,000 tons of magnesium scrap in magnesium castings in 1951. In comparison, brass foundries used about 39,000 tons of refined copper, 355,000 tons of brass ingot and 161,000 tons of scrap. Scrap constituted 11 percent of the raw material used in magnesium castings and 29 percent of the raw material used in brass and bronze castings.

Of the 9,229 tons of secondary magnesium recovered in 1951, 5,662 tons or 61 percent was reclaimed by melting scrap to make magnesium-alloy ingot, some of which was classed as primary ingot because more primary material than scrap was used in making it. Consumption of secondary magnesium ingot totaled 5,059 tons, including, in addition to the 3,888 tons used in castings, 1,074 tons in aluminum alloys and 97 tons in cathodic protection.

Prepared by Archie J. McDermid, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division

Although magnesium was on the critical list of defense materials, mandatory Government control was not exercised in 1951. The National Production Authority directed the distribution of all primary magnesium produced at the Government-owned plants for defense. By cooperative agreement the Dow Chemical Company, the only private producer of the primary metal, gave first priority to delivery of magnesium on defense orders.

Magnesium recovered from scrap processed in the United States,
1950-51, in short tons

Recoverable magnesium-alloy content of scrap processed			Magnesium recovered 1/ from scrap processed		
Kind of scrap	1950	1951	Form of recovery	1950	1951
New scrap:					
Magnesium-base........	2,770	3,727	Magnesium-alloy ingot 2/ (gross weight)........	3,682	5,662
			Magnesium-alloy castings (gross weight)........	2,504	1,675
Old scrap:			Magnesium-alloy shapes...	281	25
Magnesium-base........	4,798	5,366	In aluminum alloys.......	810	1,096
Aluminum-base.........	172	136	In zinc and other alloys..	57	55
Total.............	4,970	5,502	Chemical and other dissipative uses..........	95	101
			Cathodic protection........	311	615
Grand total........	7,740	9,229	Grand total.........	7,740	9,229

1/ Includes alloying elements.
2/ Figures include secondary magnesium and alloying elements incorporated in primary magnesium ingot.

Stocks and consumption of new and old magnesium scrap in the United States
in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
Cast scrap..........	2,308	6,094	682	6,139	6,821	1,581
Solid wrought scrap..	156	2,863	2,910	--	2,910	109
Borings, grindings, drosses, etc.......	41	755	657	--	657	139
Total...........	2,505	9,712	4,249	6,139	10,388	1,829

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UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

MINERAL MARKET REPORT
M.M.S. NO. 2121

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FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE.

SECONDARY NICKEL IN 1951

The recovery of secondary nickel from nonferrous scrap in 1951 totaled 8,602 short tons valued at $9,252,311, a decrease of 2 percent in quantity below the 8,795 tons, valued at $8,408,020, recovered in 1950.

As in 1950, more secondary nickel was recovered in copper-base alloys in 1951 than in any other way, but the percentage of the total so recovered decreased from 40 in 1950 to 30 in 1951. Nickel recovered from nonferrous scrap in iron and steel, which had risen from 1,201 tons in 1949 to 1,824 tons in 1950, increased to 2,149 tons in 1951. Nickel recovered in nickel-base alloys declined 18 percent in 1951 to 1,096 tons, or to about the same quantity as in 1949.

In addition to 14,914 tons of nickel silver scrap, a copper-base item, 7,164 tons of nickel-base scrap were consumed in 1951. The corresponding figures for 1950 were 21,060 and 6,441 tons respectively. The recoverable nickel content of the 14,914 tons consumed in 1951 was calculated to be 2,438 tons, and was the total recovery of nickel from old and new copper-base scrap as shown in the recovery table. This is close to the quantity of nickel reported as recovered in copper-base alloys as shown in the same table. These proportions obtained for previous years as well, indicating that all or nearly all the nickel silver scrap and little if any nickel-base scrap were used in copper-base alloys. The nickel silver shown as consumed in the manufacturers and foundries scrap table was used chiefly by brass mills. The increased reported consumption of nickel residues as indicated in this table was due to better coverage of plants reclaiming nickel from spent nickel catalyst.

Distribution and use of nickel and use of nickel scrap, were controlled during the first 7½ months of 1951 by means of National Production Authority Order M-14. In M-80, which replaced M-14 on August 15, the provisions of the latter order were continued and control was expanded. The use of nickel and nickel scrap for nickel plating many products was prohibited and the primary metal was placed under complete allocation. In Ceiling Price Regulation 29, issued May 3, 1951, maximum prices for nickel scrap including nickel-bearing steel scrap were established.

Prepared by Archie J. McDermid, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Nickel recovered from scrap processed in the United States, 1950-51,
in short tons

Recoverable nickel content of scrap processed		
Kind of scrap	1950	1951
New scrap:		
Nickel-base	636	1,143
Copper-base	2,796	1,875
Aluminum-base	582	770
Total	4,014	3,788
Old scrap:		
Nickel-base	3,835	3,896
Copper-base	657	563
Aluminum-base	289	353
Lead-base	---	2
Total	4,781	4,814
Grand total	8,795	8,602

Nickel recovered from scrap processed		
Form of recovery	1950	1951
As metal	535	684
In nickel-base alloys	1,336	1,096
In copper-base alloys	3,522	2,554
In aluminum-base alloys	874	1,125
In lead-base alloys	39	26
In cast iron and steel 1/	1,824	2,149
In chemical compounds	665	968
Grand total	8,795	8,602

1/ Includes only nonferrous nickel scrap added to cast iron and steel.

Stocks and consumption of new and old nickel scrap at smelters and refiners in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
Unalloyed nickel	64	793	22	799	821	36
Monel metal	687	1,127	306	1,325	1,631	183
Nickel silver 1/	853	3,695	270	3,794	4,064	484
Miscellaneous nickel alloys	15	129	128	-----	128	16
Nickel residues	27	62	---	52	52	37
Total	1,646	5,806	726	5,970	6,696	756

1/ Copper-base scrap, and so tabulated except in this table and table 28.

Stocks and consumption of new and old nickel scrap at foundries and plants of other manufacturers in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
Unalloyed nickel	206	692	354	435	789	109
Monel metal	390	1,562	399	1,158	1,557	395
Nickel silver 1/	737	11,010	10,725	125	10,850	897
Miscellaneous nickel alloys	16	740	2	661	663	93
Nickel residues	143	1,657	410	1,113	1,523	277
Total	1,492	15,661	11,890	3,492	15,382	1,771

1/ Copper-base scrap, and so tabulated except in this table and table 27.

Interior--Duplicating Section, Washington, D. C., December 19, 1952 33079

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

MINERAL MARKET REPORT
M.M.S. NO. 2122

For immediate release

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE.

SECONDARY ZINC IN 1951

Secondary zinc recovered in 1951 from purchased scrap and residues totaled 314,377 short tons, representing a decrease of 4 percent from the 326,030 tons recovered in 1950, according to the Bureau of Mines, United States Department of the Interior. In comparison, mine production of recoverable zinc in the United States was 671,526 tons valued at $244,435,464 in 1951 and 623,375 tons valued at $177,038,500 in 1950. Values were calculated at the average weighted price for all grades of refined zinc sold by producers which was 14.2 cents in 1950 and 18.2 cents in 1951.

Recovery of zinc from zinc-base scrap decreased to 147,919 tons in 1951 from 167,012 in 1950, whereas recovery of zinc from copper-base scrap increased 5 percent or to 165,403 tons. This increase was caused chiefly by the brass mills, which used only about 1,500 tons more of copper-base scrap in 1951 than in 1950, but the zinc content of the scrap used was 5,000 tons greater in 1951. The lowered recovery of zinc from zinc scrap may be attributed in part to the general nonferrous scrap shortage and to the decreased use of slab zinc in galvanizing to 400,000 tons in 1951 from 442,000 in 1950. All the dross, the principal zinc scrap item, all the sal skimmings and a large part of the dry skimmings generated come from galvanizing operations.

The figures for recovery of zinc from zinc-base, copper-base and aluminum-base scrap in the left side of the recovery table represent the recoverable zinc in the scrap consumed during 1950 and 1951. They are obtained by multiplying the reported weights of scrap consumed during the year by percentage recovery factors to obtain the metallic recovery (weight of metal after melting loss), then multiplying the metallic recovery by composition percentages to obtain the quantities of zinc, copper and aluminum recoverable. The recoverable zinc from zinc die cast scrap is part of the zinc from zinc-base scrap in the zinc recovery table; the recoverable copper is credited to zinc-base scrap in the copper recovery table, as shown in the Secondary Copper Section of the Minerals Yearbook, and the recoverable aluminum to the zinc-base scrap in the aluminum recovery table.

The tonnages of zinc recovered are listed in the right side of the recovery table by products as reported to the Bureau of Mines by the companies. Zinc recovered as slab zinc and zinc dust by distillation and by remelting decreased 18 percent in 1951 or to 85,113 tons. Zinc recovered in zinc-base alloys also decreased, but zinc recovered in other alloys and in chemicals increased. The quantities in the production table are on a gross weight basis except for the secondary zinc in chemicals item, whereas those in the recovery table are on a zinc content basis.

Prepared by Archie J. McDermid, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division, December 15, 1952.

Foundries do not consume much zinc scrap; most of the scrap, including all of the residues, as reported in the table for stocks and consumption of scrap by chemical plants, foundries, and other manufacturers was consumed by chemical plants. A few zinc distillation plants have chemical departments. In such cases consumption of residues is credited to distillers. Some skimmings were roasted by smelters before being used by the chemical plants. The dry skimmings consist of zinc oxide and metallic zinc and are roasted to convert the metallic zinc to oxide which is more easily dissolved. If sal ammoniac or zinc ammonium chloride flux are used in galvanizing, the dry skimmings will contain some chlorine, that is, they will be contaminated to some extent with sal skimmings, which contain zinc oxychloride as explained in the Zinc Section of the Secondary Metals chapter in the 1950 Minerals Yearbook. The chlorine is vaporized as zinc chloride in the roasting operation and is lost in the exhaust gases. Sal skimmings can, however, be used by the chemical plants, in making zinc chloride, without previous roasting. The price paid for sal skimmings to be shipped to the Philadelphia area in 1951 was from $30 to $35 a ton f.o.b. shipping point.

Total consumption of zinc byproduct residues, excepting dross but including skimmings, flue dust and chemical residues, increased to 127,000 tons in 1951 from 126,000 tons in 1950, but recovery of secondary zinc in chemicals declined 3,000 tons. However, some of the residues in each year were distilled with primary zinc concentrates to produce slab zinc. One plant reported production of redistilled slab zinc from skimmings which were not mixed with concentrates.

Of the zinc scrap consumed in 1951, only 11 percent, or 24,520 tons, was classified as old scrap; the largest use of zinc is in galvanizing from which there is, at present, slight old-scrap salvage. Consumption of old galvanized iron and steel scrap gives steel-furnace flue dust a small zinc content, some of which is recovered by treatment of the flue dust. The brass scrap used by the brass mills is mostly new scrap and has a high zinc content which accounts for the high zinc recovery from new copper-base scrap, 117,532 tons, compared with 47,871 tons from old copper-base scrap.

Production of secondary zinc and zinc-alloy products in the United States, 1947-51, gross weight in short tons

Products	1947	1948	1949	1950	1951
Redistilled slab zinc	59,542	62,320	55,041	66,970	48,669
Zinc dust	28,334	29,932	21,243	27,507	29,754
Remelt spelter 1/	7,443	7,796	6,045	7,243	4,454
Remelt die-cast slab	8,595	10,543	8,266	12,647	5,596
Zinc-die and die-casting alloys	2,698	3,377	3,873	5,233	4,919
Galvanizing stock	774	580	406	354	198
Rolled zinc	2,341	2,778	2,775	3,589	3,474
Secondary zinc in chemical products	55,525	48,995	37,424	43,693	40,760

1/ Contains small tonnages of bars, anodes, etc.

Zinc recovered from scrap processed in the United States, 1950-51, in short tons

Recoverable zinc content of scrap processed		
Kind of scrap	1950	1951
New scrap:		
Zinc-base	132,827	127,901
Copper-base	118,524	117,532
Aluminum-base	582	770
Total	251,933	246,203
Old scrap:		
Zinc-base	34,185	20,018
Copper-base	39,704	47,871
Aluminum-base	208	285
Total	74,097	68,174
Grand total	326,030	314,377

Zinc recovered 1/ from scrap processed		
Form of recovery	1950	1951
As metal:		
By distillation:		
Slab zinc	66,322	48,067
Zinc dust	26,961	29,002
By remelting	10,775	8,044
Total	104,058	85,113
In zinc-base alloys	16,197	6,849
In brass and bronze	161,393	180,564
In aluminum-base alloys	689	1,091
In chemical products:		
Zinc oxide (lead-free)	14,025	9,711
Zinc sulfate	4,677	4,933
Zinc chloride	12,600	13,121
Lithopone	11,558	12,013
Miscellaneous	833	982
Total	221,972	229,264
Grand total	326,030	314,377

1/ Zinc content.

Stocks and consumption of new and old zinc scrap at smelters and distillers in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
Clippings	97	2,003	1,928	-----	1,928	172
Sheet and strip	283	3,788	-----	3,842	3,842	229
Engravers' plates	95	2,817	-----	1,047	1,047	1,865
Skimmings and ashes	5,857	36,107	38,481	-----	38,481	3,483
Sal skimmings	3,192	32	2,510	-----	2,510	714
Die-cast skimmings	930	12,811	12,835	-----	12,835	906
Dross	4,429	59,659	60,195	-----	60,195	3,893
Die castings	1,158	18,653	-----	18,098	18,098	1,713
Rod and die scrap	33	1,665	-----	608	608	1,090
Flue dust	1,392	5,585	5,926	-----	5,926	1,051
Chemical residues	349	10,926	10,351	-----	10,351	924
Total	17,815	154,046	132,226	23,595	155,821	16,040

Stocks and consumption of new and old zinc scrap at chemical plants, foundries and other manufacturers in the United States in 1951, gross weight in short tons

Scrap item	Stocks, beginning of year	Receipts during year	Consumption			Stocks, end of year
			New scrap	Old scrap	Total scrap used	
Clippings	185	4,235	4,345	---	4,345	75
Sheet and strip	23	347	-----	357	357	13
Engravers' plates	4	214	-----	212	212	6
Skimmings and ashes	610	12,160	12,442	---	12,442	328
Sal skimmings	3,794	24,084	26,640	---	26,640	1,238
Die-cast skimmings	-----	3	3	---	3	-----
Die castings	24	1,623	1,263	356	1,619	28
Flue dust	650	3,926	4,015	---	4,015	561
Chemical residues	1,222	14,056	13,714	---	13,714	1,564
Total	6,512	60,648	62,422	925	63,347	3,813

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MINERAL INDUSTRY SURVEYS
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

FOR IMMEDIATE RELEASE

MINERAL MARKET REPORT
MMS No. 2124

MICA IN 1951

General Summary

Domestic production of sheet mica during 1951 remained small in terms of world production, but the United States continued to be the principal producer of ground mica. Sheet mica output in 1951 increased 2.8 percent in quantity and 26.0 percent in value. The quantity of scrap mica and mica recovered from kaolin and schist sold or used by the producers increased 3.6 percent. Consumption of mica splittings increased 67.9 percent, as did the production of built-up mica which is made from splittings.

DOMESTIC PRODUCTION

Sheet Mica.- Production of sheet mica in 1951 totaled 594,884 pounds valued at $160,322 and was only a small percent of the total consumption. Of the five States reporting production, North Carolina ranked first with 464,949 pounds, representing 78.2 percent of the total domestic output. South Dakota did not report any production in 1951.

In comparison with output in 1950, North Carolina had a production of 483,736 pounds and South Carolina 13,018.

Scrap Mica.- Sales of domestic scrap mica, including reclaimed mica, to grinders in 1951 totaled 71,871 short tons valued at $1,884,087. This quantity represents an all time high for this industry. Of the total, scrap mica amounted to 59,514 short tons valued at $1,475,059 and reclaimed mica, recovered from kaolin and mica schist, totaled 12,357 short tons valued at $409,028.

CONSUMPTION

Sheet Mica.- Consumption of sheet mica, **block, film, and splittings, in 1951,** represented a moderate increase over the previous year. Approximately 96.6 percent of the 17,465,024 pounds consumed were furnished from foreign sources. Block mica and film mica were used mainly in the manufacture of electrical commutators; armatures; radio, television, and radar tubes; capacitors; and household appliances such as flatirons and toasters.

A total of 13,379,295 pounds of mica splittings valued at $11,760,617 were consumed during 1951. Approximately 92 percent of the splittings supply

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Prepared by Robert D. Thomson and G. E. Tucker under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, December 1952.

was imported from India. Almost the entire quantity is used in the manufacture of built-up mica for molding, segment, and heater plates, mica ribbons, and tapes.

Ground Mica.- Ground mica, the sole derivative of scrap mica, sold or used by producers in 1951 totaled 70,122 tons. This was a slight decrease in comparison to the 72,250 short tons consumed in 1950.

Approximately 40 percent of the ground mica was used by the roofing industry. The remainder was consumed by a large number of other industries of which the paint industry used 17 percent, rubber industry 9 percent, plastics industry 2 percent, and wallpaper industry 1 percent.

IMPORTS

In 1951, imports of mica of all types totaled 18,889 short tons, compared with 18,510 in 1950. Mica, not cut or stamped to dimensions, not above 12/10,000 of an inch in thickness represents the bulk of the splittings for built-up mica. Imported splittings in 1951 totaled 19,665,057 pounds, as compared to 23,086,329 pounds in 1950. Approximately 93 percent of the total splittings imports came from India. The remaining 7 percent came mainly from Madagascar and Canada, and are phlogopite splittings. Imports of unmanufactured mica valued above 15 cents per pound plus the imports from Brazil of manufactured films and splittings, not cut or stamped to dimensions over 12/10,000 of an inch in thickness is approximate index of the imports of block mica suitable for electronic applications. In 1951, these items totaled 3,795,843. The imports from India over 12/10,000 of an inch in thickness are generally accepted as film. During the year, a total of 1,049,928 pounds were imported.

TABLE 1.- Mica sold or used by producers in the United States, 1935-39 (average) and 1946-51

Year	Sheet mica						Scrap mica and mica recovered from kaolin and schists		Total	
	Uncut punch and circle mica		Uncut mica larger than punch and circle		Total uncut sheet mica 1/					
	Pounds	Value	Pounds	Value	Pounds	Value	Sh. T.	Value	Sh. T.	Value
1935-39(average)..	888,313	$46,408	252,411	$139,306	1,140,724	$185,714	21,986	$285,512	22,557	$471,226
1946..............	986,891	126,039	91,976	91,916	1,078,867	217,955	53,602	1,041,423	54,141	1,259,378
1947..............	343,832	47,099	71,757	69,011	415,589	116,110	49,797	1,095,578	50,005	1,211,688
1948..............	216,794	23,928	53,248	22,012	270,042	45,940	52,157	1,091,698	52,292	1,137,638
1949..............	450,835	72,576	63,159	59,521	513,994	132,097	32,856	795,782	33,113	927,879
1950:										
North Carolina..	457,428	71,323	26,308	30,856	483,736	102,179	48,193	1,281,584	48,435	1,383,763
South Dakota....	12,560	1,375	458	309	13,018	1,684	1,902	24,989	1,909	26,673
Other States 2/.	76,445	13,977	5,619	8,088	82,064	22,065	19,265	436,043	19,306	458,108
Total.......	546,433	86,675	32,385	39,253	578,818	125,928	69,360	1,742,616	69,650	1,868,544
1951:										
North Carolina..	419,524	84,056	45,425	43,148	464,949	127,204	52,550	1,441,886	52,782	1,569,090
South Dakota....	-------	-------	-------	-------	---------	-------	2,292	42,714	2,292	42,714
Other States 2/.	124,522	24,373	5,413	8,745	129,935	33,118	17,029	399,487	17,094	432,605
Total.......	544,046	108,429	50,838	51,893	594,884	160,322	71,871	1,884,087	72,168	2,044,409

1/ Includes small quantities of splittings in certain years.
2/ Includes Arizona, Colorado (1950-51), Connecticut (1950-51), Georgia, Maine, New Hampshire (1950-51), New Mexico (1950), New York (1950), Pennsylvania and Virginia.

TABLE 2.- Scrap and reclaimed mica sold or used by producers in the United States, 1935-39 (average) and 1947-51

	Scrap		Reclaimed 1/		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1935-39(average)......	13,582	$168,688	8,404	$116,824	21,986	$285,512
1947..................	35,199	709,745	14,598	385,833	49,797	1,095,578
1948..................	(2)	(2)	(2)	(2)	52,157	1,091,698
1949..................	24,942	526,268	7,914	209,514	32,856	795,782
1950..................	58,250	1,401,411	11,110	341,205	69,360	1,742,616
1951..................	59,514	1,475,059	12,357	409,028	71,871	1,884,087

1/ Mica recovered from kaolin and mica schist.

2/ Bureau of Mines is not at liberty to distribute total because of too few producers of reclaimed.

TABLE 3.- Production of sheet and punch mica and apparent consumption of sheet and punch mica and mica splittings in the United States, 1942-51, in pounds

Year	Production	Apparent consumption	Year	Production	Apparent consumption
1942....	2,761,844	12,888,273	1947....	415,589	11,302,644
1943....	3,448,199	17,296,196	1948....	270,042	11,009,970
1944....	1,523,313	15,185,998	1949....	513,994	11,005,987
1945....	1,298,587	13,310,700	1950....	578,818	1/ 14,624,315
1946....	1,078,867	13,287,337	1951....	594,884	17,465,024

1/ Revised figure.

TABLE 4.- Consumption and stocks of mica splittings in the United States, 1948-51, by sources, as reported by consumers

	1948		1949		1950		1951	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Consumption:								
Domestic.........	1/ 75,395	1/ $33,106	81,001	$45,767	2/200,728	2/$105,717	2/ 164,213	2/$104,868
Canadian.........	237,350	150,487						
Indian...........	7,228,660	5,866,441	7,462,101	6,624,447	9,847,591	8,032,918	12,306,853	10,995,620
Madagascan.......	375,960	250,547	571,702	426,151	734,879	492,785	908,229	660,129
Mexican..........	(1/)	(1/)	---------	---------	(2/)	(2/)	(2/)	(2/)
Total........	7,917,365	6,300,581	8,114,804	7,096,365	10,783,198	8,631,421	13,379,295	11,760,617
Stocks in consumers' hands Dec. 31:								
Domestic.........	147,297	78,992	2/ 85,934	2/ 34,141	2/235,537	2/ 182,999	----------	----------
Canadian.........							50,784	24,486
Indian...........	3,168,801	2,723,175	3,858,495	4,003,621	5,464,294	5,552,016	9,756,536	9,379,176
Madagascan.......	402,217	283,170	413,434	365,098	450,581	432,872	522,110	497,658
Mexican..........	---------	---------	(2/)	(2/)	(2/)	(2/)	----------	----------
Total........	3,718,315	3,085,337	4,357,863	4,402,860	6,150,412	6,167,887	10,329,430	9,901,320

1/ Mexican included with domestic.
2/ Mexican included with domestic and Canadian.

TABLE 5.- Ground mica (including mica from kaolin and schist) sold by producers in the United States to various industries, 1950-51

Industry	1950			1951		
	Short tons	Percent of total	Value	Short tons	Percent of total	Value
Roofing..........	32,594	45	$1,083,584	27,919	40	$846,801
Wallpaper........	622	1	82,565	865	1	121,065
Rubber...........	5,776	8	580,840	6,551	9	507,602
Paint............	14,386	20	1,102,524	11,760	17	1,028,490
Plastics.........	1,542	2	145,599	1,186	2	138,778
Miscellaneous 1/.	17,330	24	940,585	21,841	31	1,199,892
Total........	72,250	100	3,935,697	70,122	100	3,842,628

1/ Includes mica used for molded electric insulation, house insulation, Christmas-tree snow, manufacture of axle greases and oil, annealing, pipeline enamel, oil-well drilling, welding, and other purposes.

TABLE 6.- Mica imported for consumption in the United States, 1948-50 1/ (totals), and 1951 by kinds and by countries

(U. S. Department of Commerce)

Country	Unmanufactured									
	Waste and scrap, valued not more than 5 cents per pound				Untrimmed phlogopite mica from which no rectangular piece exceeding in size 1 by 2 inches may be cut		Other			
	Phlogopite		Other				Valued not above 15 cents per pound, n.e.s.		Valued above 15 cents per pound	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
1948	4,834,354	$38,046	9,414,366	$69,494	434,429	$77,167	330,455	$35,354	2,064,451	$2,365,077
1949	981,156	5,658	2,534,919	16,082	28,304	4,238	635,313	94,182	1,802,929	2,012,675
1950	896,400	6,988	7,908,526	52,026	129,400	21,755	429,269	41,384	2/2,775,983	2/ 3,031,477
1951:										
Angola	---	---	109,710	527	---	---	---	---	31,623	122,345
Argentina	---	---	---	---	---	---	292,314	24,380	124,102	86,283
Bolivia	---	---	---	---	---	---	6,864	549	---	---
Brazil	---	---	---	---	---	---	37,695	4,210	1,396,017	1,700,109
British East Africa	---	---	---	---	---	---	---	---	5,991	13,758
Canada	494,740	4,284	470,141	5,762	169,586	28,827	5,000	500	331,472	293,096
French Morocco	---	---	237,663	2,080	---	---	---	---	---	---
India	---	---	9,575,792	72,690	---	---	22,621	3,732	1,105,434	1,522,841
Madagascar	---	---	---	---	---	---	---	---	2,699	5,991
Mexico	---	---	---	---	---	---	---	---	2,769	1,462
Mozambique	---	---	73,960	675	---	---	---	---	1,380	1,446
Southern Rhodesia	---	---	384,167	3,890	---	---	---	---	10,197	6,714
Union of South Africa	---	---	374,361	3,449	---	---	---	---	6,800	32,937
United Kingdom	---	---	---	---	---	---	---	---	4,878	3,174

(Totals cont'd. on next page)

(Cont'd. from page 7)

Total-- ------	494,740	$4,284	11,225,814	$89,073	169,586	$28,827	364,494	$33,371	3,023,362	$3,790,15

Country	Manufactured-films and splittings							
	Not cut or stamped to dimensions				Cut or stamped to dimensions		Total films and splittings	
	Not above 12/10,000 of an inch in thickness		Over 12/10,000 of an inch in thickness					
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
1948----------	16,148,048	$12,231,738	367,052	$417,931	28,905	$63,220	16,544,005	$12,712,889
1949----------	18,402,145	16,208,432	447,884	701,346	18,722	154,641	18,868,751	17,064,419
1950----------	23,086,329	18,387,967	1,090,082	1,505,827	27,799	363,097	24,204,210	20,256,891
1951:								
Belgium- Luxembourg-----	7,714	2,870	---------	---------	------	-------	7,714	2,870
Brazil--------	15,933	13,406	772,481	800,037	2,328	11,487	790,742	824,930
British East Africa------	3,747	1,220	---------	---------	------	-------	3,747	1,220
Canada--------	36,250	4,274	44	40	------	-------	36,294	4,314
China---------	250	78	---------	---------	------	-------	250	78
Germany-------	650	564	---------	---------	7,825	117,729	8,475	118,293
India---------	18,328,451	12,791,194	1,049,928	3,044,187	4,371	74,854	19,382,750	15,910,235
Japan---------	----------	----------	---------	---------	1,166	22,021	1,166	22,021
Madagascar----	1,260,954	708,063	---------	---------	------	-------	1,260,954	708,063
Mexico--------	----------	----------	401	809	14,805	267,018	15,206	267,827
Pakistan------	1,875	766	---------	---------	------	-------	1,875	766
United Kingdom---------	9,233	10,883	1,084	3,604	12,910	235,950	23,227	250,437
Total---	19,665,057	13,533,318	1,823,938	3,848,677	43,405	729,059	21,532,400	18,111,054

(Cont'd. on next page)

(Cont'd. from page 8)

Country	Manufactured-cut or stamped to dimensions, shape, or form		Manufactured-other					
			Mica plates, and built-up mica		All mica manufactures of which mica is the component material of chief value		Ground or pulverized	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
1948----------------	162,546	$161,917	3,053	$2,139	25,698	$33,204	1,978,960	$50,769
1949----------------	81,551	102,083	4,002	11,989	5,247	16,935	533,833	16,993
1950----------------	82,353	112,136	9,779	25,619	25,590	86,314	560,000	25,814
1951:								
Brazil------------	82,570	89,451	6,739	31,285	43,238	194,875	---------	-------
Canada------------	-------	-------	304	883	3,022	896	700,160	37,872
France------------	-------	-------	4,597	7,670	------	-------	---------	-------
Germany-----------	-------	-------	4,973	7,786	112	363	---------	-------
India-------------	13,800	18,567	200	247	300	356	39,750	965
Madagascar--------	-------	-------	-----	------	2,425	5,240	---------	-------
Mexico------------	8,896	10,420	6,304	27,881	6,462	15,347	40,000	2,400
Switzerland------	-------	-------	2,723	3,816	-------	-------	---------	-------
United Kingdom---	910	570	-----	------	7	204	---------	-------
Total-------	106,176	119,008	25,840	79,568	55,566	217,281	779,910	41,237

1/ Revised 1950 figures - as indicated.
2/ Revised figure.

Interior - Duplicating Section, Washington, D. C.

33432

TABLE 7.- World production of mica by countries, 1/ 1945-51, in metric tons
(Compiled by Helen L. Hunt)

Country 1/	1945	1946	1947	1948	1949	1950	1951
North America:							
Canada (sales)........	3,195	3,955	3,773	3,584	1,583	2/ 1,760	1,328
Guatemala 3/..........	1	4	-----	-----	------	-----	-----
Mexico (exports)......	409	81	2/ 272	27	(4)	(4)	(4)
United States (sold or used by producers):							
Block.............	589	489	189	122	233	262	270
Scrap.............	37,249	48,627	45,175	47,316	29,806	62,922	65,200
South America:							
Argentina.............	719	430	(4)	(4)	5/ 273	5/ 308	(4)
Brazil................	1,016	1,639	1,226	1,898	5/ 558	5/ 824	5/ 1,350
Peru..................	491	207	2	------	------	------	(4)
Uruguay...............	------	6	14	2	2	1	1
Europe:							
Austria...............	65	2/ 39	78	2/ 90	253	368	307
Italy.................	42	52	16	23	(4)	(4)	(4)
Norway (exports)......	564	224	169	241	113	571	547
Portugal..............	------	------	3	------	------	------	(4)
Spain.................	18	4	12	11	9	14	11
Sweden................	126	69	155	64	61	(4)	(4)
Asia:							
Ceylon................	1	(6)	(6)	------	------	------	(6)
India.................	5/ 4,859	5/ 10,675	5/ 9,788	5/ 18,384	5/ 13,743	2/5/ 16,579	11,112
Korea:							
Korea, Republic of...	95	---	---	---	---		
North Korea.........		(4)	(4)	(4)	(4)	(4)	(4)

(Cont'd. on next page)

(Cont'd. from page 10)

Country 1/	1945	1946	1947	1948	1949	1950	1951
Africa:							
Angola	20	31	89	108	57	24	136
Eritrea	--	(4)	3	2/ 1	(6)	1	---
French Morocco	--	5	--	144	54	2/ 74	37
Kenya	--	---	--	(4)	4	6	1
Madagascar	620	468	450	507	959	2/ 819	958
Mozambique	2	2	1	1	103	2/ 41	11
Northern Rhodesia	7	2/ 1	---	---	3	2	6
Southern Rhodesia	196	335	296	293	303	407	348
Tanganyika (exports)	250	342	71	75	99	136	71
Uganda	6	(6)	---	2	2	(6)	(6)
Union of South Africa	1,131	1,785	2,008	1,362	1,066	1,371	1,779
Oceania:							
Australia	158	229	371	427	736	738	573
New Zealand	(6)	---	---	---	---	---	---
Total (estimate) 1/	60,000	80,000	77,000	87,000	64,000	2/ 104,000	101,000

1/ In addition to countries listed, mica is also produced in China, Colombia, Ethiopia, Rumania, and U.S.S.R., but data on production are not available; estimates for these countries are included in total.
2/ Revised figure.
3/ Imports into United States.
4/ Data not available; estimate by senior author of chapter included in total.
5/ Exports.
6/ Lessthan 0.5 tons.

Foreign Minerals Statistics Unit, Region IX
Bureau of Mines, September 23, 1952

338.265
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MINERAL INDUSTRY SURVEYS
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
OSCAR L. CHAPMAN, Secretary J. J. FORBES, Director

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MINERAL MARKET REPORT
MMS NO. 2126

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE

GOLD AND SILVER IN 1951

Gold and silver in the United States in 1951 failed to maintain the gains set by the industry in the preceding year. The domestic mine output of recoverable gold was 1,980,663 ounces, corresponding to a decline of 17 percent; that of recoverable silver was 39,766,779 ounces, corresponding to a drop of 6 percent. Decreases in output of both gold and silver were general in most of the principal areas that produce these metals.

The drop in gold production in 1951 was due to various factors for various areas including lack of labor, depletion of reserves at some properties, lower average gold content of base-metal ores mined, smaller output of base-metal ores containing gold because of strikes, and curtailment or abandonment of some straight gold mining operations owing to high costs and the fixed price of gold. High costs of labor and materials have virtually eliminated straight gold mining in some areas. Lower output of silver was due to a smaller production in some areas of base-metal ores containing silver, and to a lower average silver content in other areas of base-metal ores mined. The higher Treasury buying price for silver domestically mined after July 1, 1946, continued to encourage silver mining.

The Treasury buying price for gold and silver throughout 1951 continued at $35 and $0.90505+ per fine troy ounce, respectively. The price of silver that could not qualify for Treasury purchase fluctuated from a low of $0.8000 to a high of $0.9016 per ounce of silver 0.999 fine in 1951 compared with $0.7175 and $0.8000, respectively, in 1950. The net outflow of gold from the United States that commenced in September 1949 continued almost without interruption to mid 1951; however, the flow was reversed in July with the result that the net loss in United States monetary stocks during 1951 was slight. Continuing a trend resumed in 1946, the net inflow of silver into the United States was maintained in 1951, but compared with 1950 the net gain was 9 percent less.

South Dakota was the leading gold-producing State in 1951, followed in order by Utah and California, the same as in 1950. These three States together with Alaska accounted for 74 percent of the United States total output. The South Dakota production was obtained almost entirely from gold ore mined at the Homestake property; Utah gold was principally a byproduct of copper mining in the West Mountain (Bingham) district;California yield came mainly from straight gold mining operations, both lode and placer; and Alaska production was almost entirely from placer operations, mainly bucket-line dredging. Idaho continued its rank as the leading silver-producing State, followed by Utah, Montana, and Arizona, an order unchanged since 1943. These four States furnished 84 percent of the domestic silver production of 1951.

Prepared by James E. Bell and Kathleen M. McBreen, under the supervision of M. H. Kline, Chief, Rare and Precious Metals Branch, Minerals Division.

Of the domestic gold production of 1951, 25 percent was recovered by placer methods, 34 percent by amalgamation and cyanidation, and 41 percent in the smelting of ores and concentrates. Nearly 99 percent of the domestic silver output was recovered by the smelting of ores and concentrates.

Production of gold outside the United States was moderately greater in 1951 than in the preceding year, due mostly to a higher (estimated) output in the Soviet Union. Production of silver outside the United States in 1951 was slightly more than in 1950, reflecting increases in Peru, West Germany, and South-West Africa.

Salient statistics of gold and silver in the United States, 1/ 1947-51

	1947	1948	1949	1950	1951
Mine production, fine ounces:					
Gold	2,109,185	2,014,257	1,991,783	2,394,231	1,980,663
Silver	35,823,563	38,096,031	34,674,952	42,459,014	39,766,779
Ore (dry and siliceous) produced (short tons):					
Gold ore	3,523,715	3,261,194	3,376,139	3,584,360	2,605,902
Gold-silver ore	366,454	569,760	412,378	433,461	368,184
Silver ore	344,649	370,647	476,960	627,349	492,143
Percentage derived from—					
Dry and siliceous ores:					
Gold	39	39	45	43	39
Silver	26	27	24	33	32
Base metal ores:					
Gold	29	31	28	31	36
Silver	74	73	76	67	68
Placers:					
Gold	32	30	27	26	25
Silver	(2)	(2)	(2)	(2)	(2)
Net industrial consumption:					
Gold	$48,900,000	$44,986,000	$108,842,471	$97,845,753	$69,476,979
Silver, fine ounces	98,500,000	105,289,000	88,000,000	110,000,000	105,000,000
Imports:					
Gold	$2,079,588,406	$1,981,175,178	$771,390,261	$162,748,661	$81,258,502
Silver	$68,140,343	$70,884,513	$73,535,694	$110,035,107	$103,468,510
Exports:					
Gold	$213,240,800	$300,771,144	$84,935,678	$534,035,794	$630,381,566
Silver	$30,648,742	$12,400,060	$23,281,043	$6,201,874	$8,590,185
Monetary stocks (end of year): 3/					
Gold	$22,754,000,000	$24,244,000,000	$24,427,000,000	$22,706,000,000	$22,695,000,000
Silver, fine ounces	1,953,000,000	1,952,000,000	1,978,000,000	1,983,000,000	1,965,000,000
Price, average, per fine ounce:					
Gold	$35.00	$35.00	$35.00	$35.00	$35.00
Silver	$0.905+	$0.905+	$0.905+	$0.905+	$0.905+
World production, fine ounces: 4/					
Gold	28,900,000	29,800,000	30,800,000	32,500,000	33,500,000
Silver	167,700,000	173,200,000	173,800,000	198,600,000	198,600,000

1/ Philippine Islands and Puerto Rico excluded. 2/ Less than 0.5 percent. 3/ Owned by Treasury Department; privately held coinage not included. 4/ Estimated figures.

Mine production of gold and silver in the United States, 1950 and 1951 by States, in fine ounces

	Gold		Silver	
	1950	1951	1950	1951
Western States and Alaska:				
Alaska	289,272	239,637	52,638	32,870
Arizona	118,313	116,093	5,325,441	5,120,985
California	412,118	339,732	1,071,917	1,145,219
Colorado	130,390	116,503	3,492,278	2,787,882
Idaho	79,652	45,064	16,095,019	14,753,023
Montana	51,764	30,502	6,590,747	6,393,768
Nevada	178,447	121,036	1,537,217	981,669
New Mexico	3,414	3,959	338,581	443,267
Oregon	11,058	7,927	13,565	6,218
South Dakota	567,996	458,101	142,065	139,590
Texas	49	32	2,454	1,381
Utah	457,551	432,216	7,083,808	7,310,665
Washington	92,117	67,405	363,656	334,948
Wyoming	---	9	---	2
Total	2,392,141	1,978,216	42,109,386	39,451,487
West Central States:				
Missouri	---	---	236,273	184,424
States east of the Mississippi:				
Georgia	---	3	---	---
Illinois	---	---	2,001	3,465
Maryland	20	1	---	---
New York	---	---	32,628	47,568
Pennsylvania	1,764	2,179	10,563	13,575
Tennessee	160	108	39,958	24,960
Vermont	146	156	28,205	41,300
Total	2,090	2,447	113,355	130,868
Grand total	2,394,231	1,980,663	42,459,014	39,766,779

World production of gold, in 1951, by countries, in fine ounces 1/

(Compiled by Pauline Roberts and Berenice B. Mitchell)

Country 1/	1951
North America:	
United States (including Alaska) 2/	1,894,726
Canada	4,328,931
Central America and West Indies:	
Costa Rica 3/	1
Cuba	3/ 835
Dominican Republic 3/	411
Guatemala 3/	7
Honduras	31,216
Nicaragua (exports)	251,160
Panama	2,897
Salvador (exports)	27,097
Mexico	394,007
Total	6,931,300
South America:	
Argentina	(4)
Bolivia	(4)
Brazil (estimate)	200,000
British Guiana	13,485
Chile	173,646
Colombia	430,723
Ecuador	5/ 10,000
French Guiana	12,056
Peru	141,711
Surinam	6,494
Venezuela	28,606
Total	1,033,000
Europe:	
Czechoslovakia	(4)
Finland	18,721
France	45,976
Hungary	(4)
Italy	12,089
Portugal	5/ 14,000
Rumania	(4)
Spain	12,777
Sweden	80,000
U. S. S. R. (estimate) 6/	9,500,000
Total (estimate)	9,900,000
Asia:	
Burma	(4)
China	5/100,000
India	226,475
Indonesia	(4)
Japan	177,086
Korea:	
Korea, Republic of	1,000
North Korea	(4)
Malaya	17,018
Philippines	393,602
Sarawak	931
Saudi Arabia	73,104
Taiwan (Formosa)	30,500
U. S. S. R.	(6)
Total	1,100,000
Africa:	
Angola	61
Bechuanaland	(4)
Belgian Congo 7/	352,308
Egypt	16,232
Eritrea	(4)
Ethiopia	5/ 33,000
French Cameroon	5,422
French Equatorial Africa	52,849
French Guinea	(4)
French Morocco	2,069
French West Africa	(4)
Gold Coast	699,000
Kenya	19,765
Liberia	9,822
Madagascar	1,951
Mozambique	861
Nigeria	1,566
Northern Rhodesia	101
Sierra Leone	(4)
Southern Rhodesia	486,907
South-West Africa	(4)
Sudan	1,495
Swaziland	322
Tanganyika (exports)	65,224
Uganda (exports)	223
Union of South Africa	11,516,450
Total	13,370,000
Oceania:	
Australia:	
Commonwealth	886,170
New Guinea	94,085
Papua	248
Fiji	93,635
New Zealand	75,115
Total	1,149,253
World total (estimate)	33,500,000

1/ Figures used derived in part from American Bureau of Metal Statistics. For some countries accurate figures are not possible to obtain owing to clandestine trade in gold. Data not available for Austria, Bulgaria, Germany, Thailand, and Yugoslavia; estimates included in the total. In addition, production in Cyprus, and Indochina was negligible.

2/ Refinery production. Excludes production of the Philippines.

3/ Imports into United States.

4/ Data not available; estimate included in total.

5/ Estimate.

6/ Output from U. S. S. R. in Asia included with U. S. S. R. in Europe.

7/ Includes Ruanda-Urundi.

World production of silver, in 1951, by countries, in fine ounces 1/

(Compiled by Pauline Roberts and Berenice B. Mitchell)

Country	1951
North America:	
United States	39,907,257
Canada	24,244,949
Central America and West Indies:	
Costa Rica 2/	582
Cuba	2/ 172,318
Guatemala	309,857
Honduras	3,182,254
Nicaragua	2/ 141,764
Panama	5,788
Salvador	352,102
Mexico	43,797,734
Total	112,115,000
South America:	
Argentina	1,253,879
Bolivia (exports)	7,172,220
Brazil	20,315
Chile	983,491
Colombia	130,028
Ecuador	33,600
Peru	14,856,536
Total	24,450,000
Europe:	
Austria	(3)
Czechoslovakia	(3)
Finland	157,275
France	546,550
Germany, West	4,138,990
Greece	64,300
Italy	821,529
Norway	160,754
Portugal	55,798
Rumania	(3)
Spain	735,911
Sweden	(3)
United Kingdom	(3)
Yugoslavia	3,000,000
Total (estimate)	37,000,000
Asia:	
China	320,000
India	17,180
Japan	4,607,713
Korea:	
Korea, Republic of	(3)
North Korea	(3)
Philippines	274,602
Saudi Arabia	109,912
Taiwan (Formosa)	4/ 3,200
Total (estimate)	5,400,000

Country	1951
Africa:	
Algeria	(3)
Bechuanaland	(3)
Belgian Congo	3,795,266
French Morocco	(3)
Gold Coast (exports)	52,542
Kenya	2,150
Mozambique	(3)
Nigeria	200
Northern Rhodesia	-----
Southern Rhodesia	79,731
South-West Africa	1,030,066
Swaziland	18
Tanganyika (exports)	35,697
Tunisia	61,119
Union of South Africa	1,162,588
Total	9,000,000
Oceania:	
Australia:	
Commonwealth	10,436,324
New Guinea 5/	(3)
Fiji	24,869
New Zealand	133,291
Total	10,625,000
World total (estimate) 1/	198,600,000

1/ Silver is also produced in Bulgaria, Cyprus, Hong Kong, Hungary, Federation of Malaya, Indonesia, Poland, Sarawak, Sierra Leone, Turkey, and U. S. S. R.; production data are not available, but estimates are included in total.

2/ Imports into the United States. Scrap is included in this figure in many instances, most notably in the case of Cuba.

3/ Data not available; estimate included in total.

4/ Estimate.

5/ Fiscal year ended May 31, 1952.

Foreign Minerals Statistics Unit, Region IX, Bureau of Mines

Interior - Duplicating Section, Washington, D. C.

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UNITED STATES DEPARTMENT OF THE INTERIOR

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MINERAL MARKET REPORT
MMS NO. 2127

BENTONITE PRODUCTION IN 1951 - BANNER YEAR IN HISTORY

Bentonite production broke all records in 1951. According to reports of producers to the Bureau of Mines, United States Department of the Interior, there was a 25 percent tonnage increase in 1951 over 1950 and a 52 percent value increase compared with 1950. The general upswing in national economic conditions that was evident in 1950 carried over into 1951. The increased activity in oil well drilling and the overall expansion in the foundry industry were responsible for this large bentonite output.

The foundry and petroleum industries consumed 94 percent of the total tonnage - rotary-drilling mud accounted for 38 percent (460,261 short tons); filtering and decolorizing oils, 33 percent, (397,940 short tons); foundry-sand bond, 23 percent (282,753 short tons). The remainder (77,914 short tons) went into a wide variety of uses. Bentonite tonnage used for rotary-drilling mud increased 29 percent in 1951 over 1950, filtering and decolorizing oils tonnage increased 34 percent, and foundry-sand bond tonnage increased 12 percent.

The same nine States reported bentonite production in 1951 as in 1950. Increases in tonnage appeared in Arizona, California, Colorado, Mississippi, South Dakota, Texas and Wyoming and decreases in Idaho and Utah.

The Wyoming-South Dakota district accounted for 71 percent of the total bentonite production in 1951 (Wyoming-47 percent and South Dakota-24 percent) compared with 60 percent in 1950. Texas furnished 3 percent, the same as it has each year since 1948. The average value per ton, as reported by the producers to the Bureau of Mines in 1951, increased to $10.67 per ton compared with $8.79 per ton in 1950 and $8.00 per ton in 1949.

Bentonite sold or used by producers in the United States, 1949-51, by States

State	1949		1950		1951	
	Short tons	Value	Short tons	Value	Short tons	Value
California......	(1/)	(1/)	(1/)	(1/)	(1/)	(1/)
South Dakota....	137,376	$1,515,927	192,591	$2,194,894	246,585	$2,926,756
Texas...........	27,598	302,384	24,574	321,345	38,425	212,670
Wyoming.........	350,644	3,556,480	394,939	4,091,571	465,254	5,981,655
Other States 2/.	351,625	1,563,961	361,729	1,952,859	368,604	3,885,564
Total.......	867,243	6,938,752	973,833	8,560,669	1,218,868	13,006,645

1/ Included with "Other States".
2/ Arizona, California, Colorado, Idaho, Mississippi, Montana (1949 only), and Utah.

Prepared by Brooke L. Gunsallus and B. V. Russ, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, December 1951.

Interior - Duplicating Section, Washington, D. C. 33346

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MINERAL MARKET REPORT
MMS NO. 2128

FULLER'S EARTH PRODUCTION IN 1951 BREAKS ALL PAST RECORDS

According to reports of producers to the Bureau of Mines, United States Department of the Interior, the production of fuller's earth in 1951 exceeded all previous records. The tonnage increase was 22 percent more than 1950, the previous record year.

Fuller's earth consumed in mineral-oil refining in 1951 totaled 175,348 tons or 36 percent of the total output compared with 40 percent in 1950 and 47 percent in 1949. Absorbent uses took 97,465 tons (20 percent of the total compared with 21 percent in 1950 and 22 percent in 1949); insecticides, 86,339 tons (18 percent, compared with 18 percent in 1950 and 12 percent in 1949); rotary-drilling mud 79,469 tons (16 percent compared with 10 percent in 1950 and 9 percent in 1949); and vegetable oil 20,251 tons, (4 percent compared with 5 percent in 1950 and 6 percent in 1949). The remainder was in other filtering and clarifying binders, and unspecified uses.

Nevada was the only State that showed a tonnage decrease in 1951 over 1950. The Florida-Georgia area accounted for 62 percent of the total tonnage produced in 1951, the same as in 1950, while production in Texas represented 29 percent compared with 28 percent in 1950. The average value per short ton rose to $16.81 in 1951 compared with $16.42 in 1950 and $16.20 in 1949.

Fuller's earth sold or used by producers in the United States, 1949-51, by States

State	1949		1950		1951	
	Sh.tons	Value	Sh.tons	Value	Sh.tons	Value
Florida and Georgia......	181,993	$3,194,551	247,390	$4,273,890	299,071	$5,258,330
Illinois.......	9,104	118,647	-------	----------	-------	---------
Texas..........	100,745	1,242,558	112,466	1,393,773	142,273	1,952,304
Other States 1/	29,064	643,886	36,169	837,070	42,279	921,127
Total.......	320,906	5,199,642	396,025	6,504,733	483,623	8,131,761

1/ Includes California, Mississippi, Nevada, Tennessee, and Utah.

Prepared by Brooke L. Gunsallus and B. V. Russ, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, December 1952.

Interior, Duplicating Section, Washington, D. C.

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UNITED STATES DEPARTMENT OF THE INTERIOR
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MINERAL MARKET REPORT
MMS NO. 2129

KAOLIN OR CHINA CLAY PRODUCTION IN 1951 - LARGEST IN HISTORY

The domestic production of china clay or kaolin in 1951, according to reports of producers to the Bureau of Mines, exceeded all previous records. The increase was 6 percent in tonnage over 1950, the previous banner year.

Ten States produced kaolin in 1951 compared with 11 in 1950, Nevada not reporting in 1951. Georgia produced 70 percent of the total United States output in 1951, the same as in 1950. Georgia has been the principal producing State for a number of years. South Carolina was second with 17 percent and Pennsylvania was third with 4 percent of the total. All States, or groups of States, for which statistics are published in the accompanying table show substantial gains in 1951 over 1950, except South Carolina.

The use pattern in 1950 was the same as it has been for the past several years; namely, paper, rubber, refractories, and pottery in order of tonnage consumed.

Paper consumed 964,601 short tons in 1951 (52 percent of the total kaolin output, the same as in 1950); rubber used 231,331 short tons (12 percent); refractories, 200,236 short tons (11 percent); and pottery, 141,733 short tons (8 percent, the same as in 1950). The remainder (17 percent) was consumed for a wide variety of purposes including cement, high-grade tile, fertilizers, chemicals, insecticides, paint, calcimine, and linoleum. The following users registered increases: paper filler, refractories, cement, filtering and clarifying of oils; high-grade tile; linoleum; and paint. Decreases in consumption were reported for pottery, paper coating, rubber, chemicals, insecticides and fungicides, and plastic products.

The average value of domestic kaolin sold or used, as reported to the Bureau of Mines in 1951, was $13.57 compared with $13.68 in 1950 and $13.43 in 1949.

Imports of kaolin for 1951 fell to 110,475 short tons compared with 122,974 short tons in 1950. Imports represented less than 6 percent of the total domestic consumption in 1951 compared with 7 percent in 1950.

Prepared by Brooke L. Gunsallus and B. V. Russ under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, January 1953.

Kaolin sold or used by producers in the United States, 1950-51, by States

States	Sold by producers		Used by producers		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1950						
Alabama, Florida, and North Carolina.......	59,049	1,163,079	------	-------	59,049	1,163,079
California............	(1/)	(1/)	(1/)	(1/)	22,657	309,995
Georgia...............	1,146,100	16,961,781	74,555	378,747	1,220,655	17,340,528
Pennsylvania..........	(1/)	(1/)	(1/)	(1/)	62,626	250,383
South Carolina.........	(1/)	(1/)	(1/)	(1/)	348,948	4,505,022
Other States 2/	430,593	5,311,841	40,561	128,334	36,923	374,775
Total...........	1,635,742	23,436,701	115,116	507,081	1,750,858	23,943,782
1951						
Alabama, Florida, and North Carolina.......	65,776	1,227,365	-------	-------	65,776	1,227,365
California............	(1/)	(1/)	(1/)	(1/)	24,285	381,650
Georgia...............	1,191,767	17,840,265	132,043	859,470	1,323,810	18,699,735
Pennsylvania..........	(1/)	(1/)	(1/)	(1/)	75,415	306,045
South Carolina.........	(1/)	(1/)	(1/)	(1/)	322,208	4,095,912
Other States 2/	434,937	5,273,176	41,776	124,278	54,805	613,847
Total...........	1,692,480	24,340,806	173,819	983,748	1,866,299	25,324,554

1/ Included with "Other States".
2/ Includes States indicated by foot note 1 and Illinois, Nevada (1950 only), Utah, and Virginia.

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MINERAL MARKET REPORTS
MMS NO. 2130

FIRE CLAY PRODUCTION IN 1951

Largest in History

Fire clay sold or used in the United States in 1951 was the largest yearly tonnage in the history of the industry, exceeding the previous high year of 1948 by 20 percent and 1950 by 24 percent, according to reports by producers to the Bureau of Mines. An expanded national economy and increased activity in the refractory and construction industries beginning in 1950 and carrying over into 1951, were the governing factors effecting the increase. Of the major fire clay producing States only 2 (Utah and Washington) reported decreases; the remaining 15 States, as shown in the following table, reported increases.

The principal uses of fire clay in 1951 were refractories manufacture - 6,892,722 short tons (13 percent increase over 1950); heavy clay products - 4,615,634 short tons (12 percent increase over 1950). Refractories and heavy clay products, combined, used 97 percent of the total tonnage in 1951. Several of the less important uses such as high-grade tile, architectural terra cotta, and chemicals, showed decreases, in 1951 compared with 1950. No consumption of fire clay were reported in the rubber industry.

In 1950, Ohio ranked first in fire clay output, followed by Pennsylvania, Missouri, Kentucky, California, Indiana, and Illinois. These seven States accounted for 76 percent of the total production.

Type, quality, and geographic location determine, for the most part, the selling price of crude fire clay. The average value of fire clay sold or used (crude and prepared) was $4.21 per ton compared with $3.00 in 1950.

The following table shows the output of fire clay in the United States by States in 1950 and 1951.

Prepared by Brooke L. Gunsallus and B. V. Russ, under the supervision of W. F. Dietrich, Chief, Ceramic and Fertilizer Materials Branch, Minerals Division, January 1953.

Fire clay, including stoneware clay, sold or used by producers in the United States, 1950-51, by States 1/

State	Sold by producers		Used by producers		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1950						
Alabama........	116,714	$211,180	51,065	$84,584	167,779	$295,764
Arkansas........	(2/)	(2/)	(2/)	(2/)	256,042	789,876
California......	206,567	527,476	198,612	473,362	405,179	1,000,838
Colorado........	155,707	314,407	64,690	211,933	220,397	526,340
Illinois........	220,040	980,040	213,383	451,122	433,423	1,431,372
Indiana.........	372,259	526,776	131,402	274,342	503,661	801,118
Kentucky........	73,459	399,126	349,439	1,690,968	422,898	2,090,094
Maryland........	10,743	60,317	156,702	560,005	167,445	620,322
Missouri 3/.....	377,598	1,071,298	843,578	2,960,049	1,221,176	4,031,347
New Jersey......	66,370	595,483	244,772	396,404	311,142	991,887
Ohio............	793,697	2,177,968	1,969,109	4,946,634	2,762,806	7,124,602
Pennsylvania....	265,288	1,010,591	1,466,567	6,138,998	1,731,855	7,149,589
Tennessee.......	(2/)	(2/)	(2/)	(2/)	20,574	182,692
Texas...........	3,778	27,148	303,248	647,622	307,026	674,770
Utah............	11,913	42,246	24,246	68,846	36,159	111,092
Washington......	15,030	19,108	52,996	115,026	68,026	134,134
West Virginia...	(2/)	(2/)	(2/)	(2/)	309,100	735,285
Other States 4/.	83,758	358,893	693,137	1,677,210	191,179	328,250
Total.......	2,772,921	8,322,267	6,762,946	20,697,105	9,535,867	29,019,372

(Cont'd. on page 3)

(Cont'd. from page 2)

State	Sold by producer		Used by producer		Total	
	Short tons	Value	Short tons	Value	Short tons	Value
1951						
Alabama........	128,781	$239,201	74,558	$467,829	203,339	$707,030
Arkansas........	(2/)	(2/)	(2/)	(2/)	319,941	1,022,326
California......	209,070	567,777	301,151	868,595	510,221	1,436,372
Colorado........	201,746	422,065	131,679	406,246	333,425	828,311
Illinois........	248,482	1,187,344	243,645	587,526	492,127	1,774,870
Indiana.........	358,292	517,792	141,431	303,880	499,723	821,672
Kentucky........	140,466	622,838	442,825	3,037,788	583,291	3,660,626
Maryland	10,812	51,381	169,490	580,798	180,302	632,179
Missouri 3/	401,057	1,250,331	1,171,465	8,448,387	1,572,522	9,698,718
New Jersey......	81,403	702,209	344,658	1,070,522	426,061	1,772,731
Ohio............	939,822	2,789,217	2,214,130	8,351,767	3,153,952	11,140,984
Pennsylvania....	327,381	1,322,847	1,878,413	10,330,887	2,205,794	11,653,734
Tennessee.......	(2/)	(2/)	(2/)	(2/)	23,759	226,009
Texas...........	2,845	19,607	317,393	744,621	320,238	764,228
Utah............	5,375	28,125	29,968	80,130	35,343	108,255
Washington......	18,109	24,505	47,368	117,828	65,477	142,333
West Virginia...	(2/)	(2/)	(2/)	(2/)	732,492	1,923,872
Other States 4/.	86,026	441,365	1,184,676	3,157,188	194,510	426,346
Total......	3,159,667	10,186,604	8,692,850	38,553,992	11,852,517	48,740,596

1/Includes stoneware clay as follows: 1950, 105,147 tons, $235,063; 1951, 85,331 tons, $271,625.

2/Included with "Other States".

3/Includes diaspore and burley clay as follows: 1950-diaspore, 40,750 tons, $488,464; burley, 53,571 tons, $334,299; 1951-diaspore, 45,020 tons, $704,151; burley, 73,781 tons, $745,032.

4/Includes States indicated by footnote 2 above, and Delaware (1950) only, Idaho, Iowa, Kansas, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, and South Carolina.

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DOUGLAS McKAY, Secretary
J. J. FORBES, Director

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MINERAL MARKET REPORT
MMS NO. 2132

COPPER IN 1952
(Preliminary Report)

The supply of copper for defense and total civilian requirements in the United States continued inadequate in 1952, according to the Bureau of Mines, United States Department of the Interior. Actually slightly less copper was available in 1952 than in 1951 despite the efforts taken to stimulate the flow of metal. In May, when exports of copper from Chile to the United States were embargoed, the President authorized the release of 22,000 tons of copper from the strategic stockpile to meet the temporary emergency. The situation improved sufficiently so that late in August the Defense Production Administration moved copper from the list of most critical materials to the list of those in approximate balance. Although it is true that larger imports had eased the situation, supplies of copper still were not available for all needs.

Probably the outstanding feature of the year, and the most controversial, was the multiple prices for copper. Domestic prices continued to be controlled by the General Ceiling Price Regulation, in force since January 26, 1951, but by mid-year foreign copper, which had been selling at 27.5 cents, began to be sold at 36.5 cents a pound.

Mine production failed by a slight margin to equal the record for 1951. Receipts of copper in crude form - ores, concentrates, regulus and blister - in the first 11 months of the year were only slightly above the like period of 1951, but imports of refined copper increased 36 percent. Total imports for the year as a whole probably will exceed 1951 by 20 to 25 percent.

Estimated production of refined copper from scrap declined more than 10 percent, and total production of alloyed and unalloyed copper from old scrap (of which the refined production from scrap is a part) dropped little more than 5 percent.

Estimated producers' stocks of refined copper at the end of 1952 decreased about 30 percent from the end of 1951, were slightly smaller than those at the end of 1950, and were the smallest since 1906.

Exports of refined copper, under Government control, in the first 11 months of 1952 gained 36 percent over the similar period in 1951. Foreign material treated in the United States on toll made up most of this tonnage.

Supplies of copper in the second half of 1952 exceeded those in the first six months largely because efforts to increase imports were successful.

Government efforts to expand domestic production through loans, through purchase contracts at specified prices and with escalation provisions, and through permits granting accelerated amortization of capital outlay, as was expected, brought little

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Prepared by Helena M. Meyer, Archie J. McDermid, and Gertrude N. Greenspoon, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division

fruit in 1952. A little new production resulted from the stimulus and some threatened production losses were prevented by the granting of over-the-ceiling contracts to marginal producers, but more conspicuous increases must await the end of 1953 and even later. Government efforts to maintain production at marginal mines and to [illegible] bring in new production are given later in this summary under Defense Production Act stimulation. Apart from Government assisted projects, the Greater Butte project in Montana began to produce in the first half of 1952 but despite all gains and the fact that mining operations were almost entirely free of labor strikes that have impeded production in the past several years, total production was lower in 1952 than in 1951; this drop was largely because the grade of ore treated at some properties decreased. Some production was lost because of a two-month strike at properties of the Calumet & Hecla Consolidated Copper Co., Michigan, ending November 10, and a strike that lasted about 1 week in August at the Ray mine (Kennecott Copper Corp.) Arizona.

During the early months of the year domestic prices, under Office of Price Stabilization controls, were largely 24.5 cents a pound for electrolytic copper delivered Connecticut Valley, but a few producers had higher ceilings because their base period prices were higher. Foreign copper was sold at $27\frac{1}{2}$ cents a pound. In May Chile abrogated its agreement with the United States Government, which provided, among other things, that Chile withhold for Government disposition in world markets not more than 20 percent of the outputs of American mines operating in that country. Chilean dissatisfaction with the $27\frac{1}{2}$ cents price caused the break. Exports to the United States were embargoed for a short time but after the Office of Defense Mobilization, on May 21, authorized importers to pay higher prices for imported copper and to pass on to consumers 80 percent of costs above $27\frac{1}{2}$ cents, shipments to the United States were resumed. Later the provision was changed to "increased costs above $24\frac{1}{2}$". The Chilean price rose shortly to 35.5 cents a pound f.a.s. Chilean ports, or about 36.5 in the United States. On June 24 the OPS exempted from price control, in Amendment 21 to GOR 9, refined copper imported and copper refined from imported copper-bearing materials and imported scrap, and later issued amendments to orders CPR 110 and 68 for wire mills and brass mills, effective July 1, to reflect increases permitted by the ODM directive. The ceilings were to be revised from time to time based in part on the proportion of foreign to domestic copper available.

The price situation caused considerable confusion, and in some instances much dissatisfaction, in domestic mining circles, in the Government, and elsewhere. The situation described was further confused by the fact that a few domestic high-cost producers had higher ceiling prices than the large majority of producers and that some others had over-the-ceiling DMPA subsidies. OPS established a $27\frac{1}{2}$-cent ceiling price for Calumet & Hecla Consolidated Copper Co., based on costs of production, in September.

The NPA, in order to make as equitable a distribution as possible of the different-priced supplies decided to allocate copper to all consumers on the basis of estimated supply - 60 percent domestic and 40 percent foreign. Prices of products were based on this distribution to the end of the year.

Despite the confusion and dissatisfaction with prices, supplies improved because more foreign copper began to flow to the United States. Final figures covering foreign trade probably will indicate that nearly 50 percent more copper entered the United States from abroad in the second half than in the first six months of 1952. Part of the increase, however, could not be credited to the advanced prices for foreign copper in the United States, because the greater imports from Canada

Salient statistics of the copper industry in the United States 1943-47 (average) and 1948-52, in short tons

	1943-47 (average)	1948	1949	1950	1951	1952
New copper produced-						
From domestic ores as reported by-						
Mines	858,512	834,813	752,750	909,343	928,330	924,469
Smelters	868,314	842,477	757,931	911,352	930,774	925,000
Refineries	863,862	860,022	695,015	920,748	951,559	911,000
From foreign ores, matte, etc., refinery reports	285,674	247,424	232,912	319,086	255,429	252,000
Total new refined, domestic and foreign	1,149,536	1,107,446	927,927	1,239,834	1,206,988	1,163,000
Secondary copper recovered from old scrap only	458,231	505,464	383,548	485,211	458,124	430,000
Imports (unmanufactured) 1/	633,055	507,449	552,709	690,389	489,376	2/547,169
Refined 1/	346,075	249,144	275,811	317,363	238,547	2/301,188
Exports of metallic copper 3/	191,801	207,022	195,990	192,339	166,274	2/194,378
Refined (ingots, bars, etc.)	98,613	142,598	137,827	144,561	133,305	2/159,150
Stocks at end of year	357,100	250,000	322,000	258,000	217,000	209,000
Refined copper	87,100	67,000	61,000	26,000	35,000	24,000
Blister and materials in solution	270,000	183,000	261,000	232,000	182,000	185,000
Withdrawals from total supply on domestic account-						
Total new copper	1,420,000	1,214,000	1,072,000	1,447,000	1,303,000	1,339,000
Total old and new copper (old scrap only)	1,878,000	1,719,000	1,456,000	1,932,000	1,761,000	1,769,000
Price average--cents per pound	4/ 14.1	21.7	19.7	20.8	5/ 24.2	5/ 24.3

1/ Data include copper imported for immediate consumption plus material entering country under bond.

2/ January-November, inclusive.

3/ Total exports of copper, exclusive of ore, concentrates, composition metal, and unrefined copper. Exclusive also of "Other manufacturers of copper," for which figures of quantity are not recorded.

4/ Exclusive of bonus payments of the Office of Metals Reserve; Premium Price Plan covered the period February 1, 1942, to June 30, 1947, inclusive.

5/ Exclusive of copper produced abroad and delivered in the United States; in 1952 includes Defense Materials Procurement Agency maintenance of production subsidies.

resulted in large part from the diversion to United States refineries of copper from a labor-struck refinery in Quebec.

The price for copper in foreign markets in the latter part of 1952 was below that in the United States, in contrast with the situation that had prevailed for many earlier months.

The British Ministry of Materials official maximum price was £227 per long ton (equivalent to 28.375 cents a pound) when the year began, was raised to £231 (28.875 cents) effective April 1, and to £281 (35.125 cents) June 16. In May the British Government announced that it had decided again to base its selling price of metals and other raw materials on New York market prices plus a differential for freight, etc. On June 20 the British Government announced agreement with producers to purchase copper at 33 cents a pound. The British Ministry of Materials price was raised to £287 (35.875 cents) on July 7, reduced to £285 (35.625 cents) on July 31, thereafter remaining unchanged. British purchases from producers were at 33½ cents a pound f.a.s. New York beginning August 1. Selling prices on the European Continent were reported to be at about this level. Selling prices in foreign markets in 1951 were considerably in excess of those in 1952 but an average world price is not available.

Outside of the United States a number of strikes impeded production in 1952, in contrast with the relatively undisturbed situation at United States mines. Strikes at the Chuquicamata and Andes properties in Chile began late in April and lasted about 15 days each, with the Chilean President effecting a compromise arrangement. Another strike at Andes in October lasted a few days only. Workers at the Braden mine, also in Chile, struck December 22 and were out at the year end. Miners at the four main Northern Rhodesian copper properties - Mufulira, N'Changa, Roan Antelope and Rhokana, were out of work three weeks, ending November 10, because of a strike, with a reported loss of 20,000 tons of copper. The Montreal East refinery of Canadian Refineries, Ltd., Quebec, Canada, reopened late in November following a strike that lasted 18 weeks.

Labor disorders were given by the American Smelting & Refining Co. as the reason for advising the Bolivian Government in July, that it planned to suspend operations at the Corocoro mine in 90 days. The company leased the mine to the Bolivian Government early in October for an indefinite period.

Incomplete data at hand when this report was prepared indicate that world production was about 2,800,000 short tons in 1952 or slightly less than the output in 1951.

Defense Production Act Stimulation. - Among the major Government actions, under the Defense Production Act, directed in 1953 toward stimulation of increasing supplies of copper were the following:

In July the Reconstruction Finance Corp. approved a loan of $94,000,000, to the San Manuel Copper Corp., wholly-owned subsidiary of the Magma Copper Co. for expansion of copper and molybdenum production. Plans called for mining, milling, and smelting 10,000,000 tons of ore annually, with production to begin in 1957. Full operation was expected to yield 70,000 tons of copper and 3,000 tons of molybdenum annually. In August, DMPA completed a purchase contract with the company providing for the purchase of totals of 365,000 tons of copper and 16,000 tons of molybdenum.

In October the DMPA entered into a purchase agreement with the Bagdad Copper Corp., guaranteeing a market for up to 13,500 tons of copper a year, at 24½ cents a pound, and 470 tons of molybdenum. The agreement covers 8 years of production terminating automatically June 30, 1962. Enlargement of the open pit and installation of an electrolytic refinery are called for. An eventual capacity of 17,500 tons of refined copper and 6,000 tons of recoverable copper in precipitates is envisioned. Current capacity was said to be 10,000 tons of copper.

In June General Services Administration reached agreement with Campbell Chibougamau Mines, Ltd. for the purchase of 31,600 tons of refined copper from the company's property at Merrill Island, Quebec, by December 31, 1956, at 24½ cents a pound delivered Connecticut Valley or the market price, whichever is higher.

Maintenance of production subsidies were granted by DMPA to the following companies in December 1951 and during 1952:

Calumet & Hecla Cons. Copper Co. - certain properties
Copper Range Co. - Champion mine
Sam Knight Mining Lease, Inc.
Yucca Mining & Milling Co.
Banner Mining Co.
Howe Sound Co.

Production. - The following three tables include 1952 figures covering 11 months' actual figures plus company estimates for December.

Mine production of recoverable copper in the United States, 1943-47 (average) and 1948-52, in short tons

Year	Short tons	Year	Short tons
1943-47 (average)	858,512	1950	909,343
1948	834,813	1951	928,330
1949	752,750	1952	924,469

Copper produced by smelters from domestic ores, 1943-47 (average) and 1948-52, in short tons

1943-47 (average)	868,314
1948	842,477
1949	757,931
1950	911,352
1951	930,774
1952	925,000

The estimated smelter production for December amounted to 79,000 tons or an increase of 3 percent over the average for the preceding 11 months. The total for the year was 1 percent less than in 1951.

Refinery production of new copper from domestic and foreign sources decreased 4 and 1 percent, respectively, as compared with 1951.

Refined copper produced at primary plants from domestic and foreign ores and from secondary material, 1943-47 (average) and 1948-51, in short tons,

Year	Domestic ores	Foreign ores	Total new copper	Secondary	
				New	Old
1943-47 (average)	863,862	285,674	1,149,536	1/136,036	
1948	860,022	247,424	1,107,446	115,710	129,666
1949	695,015	232,912	927,927	81,693	130,699
1950	920,748	319,086	1,239,834	89,360	100,386
1951	951,559	255,429	1,206,988	83,021	52,002
1952	911,000	252,000	1,163,000	83,000	35,000

1/ Breakdown of new and old scrap not available.

Total output of secondary copper is shown in the accompanying table. Production from scrap was virtually unchanged from 1951.

Of the total of 1,281,000 tons of primary and secondary copper produced at primary refineries in 1952 (1,342,011 tons in 1951), 1,169,000 tons were electrolytic (1,218,195 tons in 1951) and 112,000 tons (123,816 in 1951) were Lake or other fire refined.

Secondary copper produced in the United States, 1948-52, in short tons

	1948	1949	1950	1951	1952
Copper recovered as unalloyed copper	284,026	250,089	260,704	186,462	182,000
Copper recovered in alloys 1/	688,762	463,054	716,535	745,820	740,000
Total secondary copper	972,788	713,143	977,239	932,282	922,000
From new scrap	467,324	329,595	492,028	474,158	492,000
From old scrap	505,464	383,548	485,211	458,124	430,000

1/ Includes copper in chemicals, as follows: 1948, 17,612; 1949, 14,840; 1950, 17,413; 1951, 22,905; 1952, not available, estimate included.

Foreign trade. - Statistics on imports and exports are compiled from records of the Department of Commerce. Figures for 11 months make it appear that the annual import total for 1952 will be 20 to 25 percent more than in 1951. Refined imports made up more than half of the total and came largely from Chile and Canada. Exports are shown first for better space utilization.

Refined copper was likewise by far the chief export classification. Shipments in 1952 went again mainly to the United Kingdom, France, Germany, Italy, and the Netherlands. The unusual movement to Canada was due to the return to that country of copper treated on toll (see opening section of this report).

Exports of copper in bars, ingots, etc., by principal countries of destination, in short tons, are given in the following table.

	January-November			January-November	
	1951	1952		1951	1952
Argentina	1,276	-	Netherlands	7,291	5,434
Austria	548	1,301	Norway	1,791	1,674
Brazil	3,381	5,172	Spain	-	2,352
Canada	36	11,997	Sweden	342	2,242
Denmark	1,372	1,447	Switzerland	5,359	9,562
France	16,406	31,552	United Kingdom	60,779	45,394
Germany	8,348	17,110	Other	1,981	3,510
India	184	6,198			
Italy	7,948	14,205		117,042	159,150

Exports of the other classes of copper in the first 11 months of 1951 and 1952, in short tons, are given in the following table.

	1951	1952
Ore, concentrates, etc. (copper content)	234	640
Old and scrap	7,560	8,912
Pipes and tubes	1,917	2,419
Plates, sheets and strips	534	498
Rods	509	1,877
Wire: Bare	7,521	6,208

Copper (unmanufactured) imported into the United States in January-November 1951 and 1952, by countries, in short tons (general imports)

	Ore (copper content)	Concentrates (copper content)	Regulus, black or coarse copper (copper content)	Unrefined black blister and converter in pigs or converter bars	Refined in ingots, plates or bars	Old and clippings for remanufacture	Total
1951							
Bolivia	219	4,230	-------	-------	-------	-------	4,449
Canada and Newfoundland	26	22,202	644	110	24,542	664	48,188
Chile	1,316	9,874	8	44,901	194,764	633	251,496
Cuba	48	19,845	-------	-------	-------	407	20,300
Germany (West)	-------	-------	-------	-------	-------	-------	-------
Japan	-------	-------	-------	521	632	756	1,909
Malta, Gozo, Cyprus	-------	5,556	-------	-------	-------	-------	5,556
Mexico	143	6,097	1,889	35,867	702	88	44,786
Northern Rhodesia	-------	-------	-------	1/41,486	-------	-------	41,486
Peru	1,487	6,533	331	1,885	377	1	10,614
Philippines, Republic of	(2)	2/10,423	-------	-------	-------	-------	10,423
Turkey	-------	-------	-------	-------	-------	-------	-------
Union of South Africa	-------	3,619	-------	3,698	-------	8	7,325
Yugoslavia	-------	-------	-------	6,223	-------	-------	6,223
Other countries	16	849	-------	109	188	2,765	3,927
Total	2/3,255	2/89,228	2,872	134,800	221,205	5,322	456,682

Continued on following page

Copper (unmanufactured) imported into the United States in January-November 1951 and 1952,
by countries, in short tons
(general imports)
Continued

	Ore (copper content)	Concen-trates (copper content)	Regulus, black or coarse copper (copper content)	Unrefined black blis-ter and converter in pigs or converter bars	Refined in ingots plates or bars	Old and clip-pings for remanu-facture	Total
1952							
Bolivia	363	1,308	------	------	------	------	1,671
Canada and Newfoundland	40	23,435	798	26,463	25,063	403	76,202
Chile	1,591	9,027	461	47,389	256,807	------	315,295
Cuba	222	17,088	------	------	------	870	18,180
Germany (West)	------	------	------	------	7,394	------	7,394
Japan	------	------	------	------	223	------	223
Malta, Gozo, Cyprus	------	5,441	------	------	------	------	5,441
Mexico	112	5,594	1,393	30,497	5,039	46	42,681
Northern Rhodesia	------	------	------	27,251	1	------	27,252
Peru	468	7,991	710	2	900	------	10,071
Philippines, Republic of	(2)	2/14,653	------	------	------	------	14,653
Turkey	------	------	------	2,708	------	------	2,708
Union of South Africa	------	4,779	------	3,326	------	------	8,105
Yugoslavia	------	------	------	8,023	5,509	------	13,532
Other countries	180	837	10	------	252	2,482	3,761
Total	2/2,976	2/90,153	3,392	145,659	301,188	3,801	547,169

1/ Includes copper credited in Commerce records to Southern Rhodesia.
2/ Some copper in "ore" and "other" from Republic of Philippines is not separately classified and is included under "concentrates."

Stocks. - Estimated stocks of refined copper in producers' hands decreased 31 percent in 1952 to the smallest quantity for many years. Stocks of blister at smelters, in transit to refineries, and of unrefined materials at refineries, increased 2 percent, and likewise were small in relation to other recent years.

Stocks of copper at primary smelting and refining plants
at end of the year, 1948-52, in short tons

Year	Refined copper	Blister and unfinished materials
1948	67,000	183,000
1949	61,000	261,000
1950	26,000	232,000
1951	35,000	182,000
1952	24,000	185,000

Apparent consumption of new copper. - Preliminary figures indicate that 3 percent more new copper entered into consumption channels (including the National Strategic Stockpile) in 1952 than in 1951. The method of calculation of apparent consumption is shown as follows:

New refined copper withdrawn from total year's supply
on domestic account, 1951-52, in short tons

	1951	1952
Refinery production of new copper from domestic sources	951,559	911,000
Refinery production of new copper from foreign sources	255,429	252,000
	1,206,988	1,163,000
Imports of refined copper (Dec. 1952 estimated)	238,547	340,000
Total new refined	1,445,535	1,503,000
Stocks of new refined copper on January 1	26,000	35,000
Total supply	1,471,535	1,538,000
Exports of refined copper (ingots, bars, or other forms) (December 1952 estimated)	133,305	175,000
Stocks December 31	35,000	24,000
	168,305	199,000
Total withdrawn on domestic account 1/	1,303,000	1,339,000

1/ Includes copper delivered by industry to the National Stockpile.

Prices. - Quoted prices for electrolytic copper, delivered Connecticut Valley, continued at 24.5 cents a pound throughout the year, and this was the ceiling price for most producers. A few producers had ceilings considerably in excess of the quoted price and some high-cost producers were granted DMPA maintenance of production subsidies. These and other factors regarding price are discussed in the opening section of this report.

Average yearly quoted prices of electrolytic copper for
domestic and export shipments, f.o.b. refineries,
in the United States, 1948-52, in cents per pound

Period	Domestic f.o.b. refinery 1/	Domestic f.o.b. refinery 2/	Export f.o.b. refinery 2/
1948	22.20	22.038	22.348
1949	19.36	19.202	19.421
1950	21.46	21.235	21.549
1951	24.38	24.200	26.258
1952	24.38	24.200	31.746

1/ As reported by American Metal Market.
2/ As reported by E&MJ Metal and Mineral Markets.

Interior, Duplicating Section - Washington, D. C.

Prepared 1/22/53

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

DOUGLAS McKAY, Secretary J. J. FORBES, Director

FOR IMMEDIATE RELEASE MINERAL MARKET REPORT MMS NO. 2133

MINE PRODUCTION OF COPPER IN THE UNITED STATES IN 1952 - PRELIMINARY ANNUAL FIGURES

Despite continuing requirements for copper in excess of supplies and despite all efforts to increase the latter, mine production of copper declined slightly in 1952, amounting to 924,500 tons compared with 928,330 tons in 1951, according to the Bureau of Mines, United States Department of the Interior. The year was relatively free of labor strikes, and the dominant reason that production failed to maintain or better the 1951 record was that the grade of ore produced at some important mines declined in 1952.

In Arizona, the leading copper State, more copper ore was produced than ever before, but output of copper declined 5 percent. Copper production in Utah and New Mexico, the second and third largest producers, rose 5 percent, while in Montana (fourth in importance) it gained 10 percent.

Production at the Greater Butte project of the Anaconda Copper Mining Co. began in the first half of 1952 and caused Montana's rise in output. The Utah Copper mine of the Kennecott Copper Corp. at Bingham, Utah was strike-free in 1952 in contrast with several earlier years, which permitted the gain in the State total. The Chino mine at Santa Rita, N. Mex. (Kennecott) operated 7 days a week throughout the year and some increased output resulted from the uninterrupted work.

General factors affecting the copper industry in 1952 were discussed in MMS 2132 published a few days ago. That report contains data also on smelter, refinery, and secondary production, as well as figures on imports, consumption and stocks.

The following tables and State reviews for 1952 were obtained from current preliminary reports on mine production of gold, silver, copper, lead, and zinc prepared in the regional offices of the Bureau of Mines. The mine data included in the regular monthly series of reports on copper likewise are prepared in the Bureau's regional offices. The figures are given in terms of recoverable copper content of ores and concentrates.

Arizona.-As usual Arizona was the leading copper-producing State in the United States in 1952. Output dropped 5 percent but except for 1951, 1950, 1943 and 1929, was the highest on record. Production of copper ore, 44,525,000 tons compared with 42,791,070 in 1951, was the largest on record, but a decline in the grade of ore mined at some of the large properties caused the drop in recoverable copper.

The Morenci mine continued to be the largest producer, although production was 13 percent less than in 1951, followed by the New Cornelia, Ray (Kennecott), Inspiration, Copper Queen, Castle Dome, Miami, Magma, Bagdad, and United Verde mines. Outstanding gains were made at the Castle Dome, Inspiration and New Cornelia properties.

Prepared by Helena M. Meyer and Gertrude N. Greenspoon under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

The copper Mountain (Morenci) maintained its rank as the chief copper-producing district in 1952 with 125,535 tons (143,921 tons in 1951). The other districts, in order of importance with 1951 production in parentheses were: Globe-Miami 92,750 (90,225), Ajo 64,150 (63,093), Mineral Creek (Ray) 47,400 (50,580), Warren (Bisbee) 27,330 (27,271), Pioneer (Superior) 17,000 (17,662), Eureka (Bagdad) 8,950 (9,087), and Verde (Jerome) 4,400 (9,742).

Open-pit operations in 1952 produced more copper ore than in any other year; output at the 6 open pits - Ajo, Bagdad, Inspiration, Miami (Castle Dome), Morenci, and Ray was 36,700,000 tons compared with 34,839,237 in 1951. Both open-pit and underground methods are used at Inspiration and Ray. All six copper smelter - International Smelting & Refining Co. at Miami, Magma Copper Co. at Superior, Phelps Dodge Corp. at Ajo, Douglas, and Morenci, and American Smelting & Refining Co. at Hayden - operated continuously throughout the year.

California. - Except for small lots of copper ore treated in 1952 California's production came mainly from ores mined principally for other metals.

Colorado. - Copper production rose 5 percent in 1952. The treasury Tunnel-Black Bear (Idarado) was the only substantial producer in the State.

Eastern States. - Production of copper by the Bethlehem Steel Co. at its Cornwall mine (Pennsylvania), Tennessee Copper Co. at its Tennessee mines, and Vermont Copper Co. at the Elizabeth mine was 14,946 tons compared with 16,140 in 1951, or a drop of 7 percent. The steel strike in mid-year which closed the Cornwall mine was the dominant factor in the decrease.

Idaho. - The sharp rise in production in 1952 was caused by increased production at the Blackbird-Chicago mine, Blackbird district, Lemhi County; this mine began to produce late in 1951 and accounted for 38 percent of the total production of Idaho in 1952. Most of the remainder of the output came from the Coeur d'Alene region.

Michigan. - The decrease of 13 percent in 1952 was caused mainly by a labor strike, from September 9 to November 10, at properties of the Calumet & Hecla Consolidated Copper Co., and to curtailment of operations at the Champion mine of the Copper Range Co. during a railroad strike from March 10 to April 29. The Quincy Mining Co. operated its tailings plant continuously throughout the year.

Missouri. - Lead-copper ores of Southeast Missouri yielded 1,726 tons of copper in 1952, compared with 2,422 in 1951.

Montana. - Montana was the fourth largest copper-producing State in 1952 among leading States. Expanded production, 10 percent more than in 1951, can be ascribed very largely to the start of production at the Greater Butte project in the first half of the year.

Nevada.-- Output in 1952 was virtually unchanged from 1951. Production came principally from the Ruth and Kimbley open-pit mines of the Kennecott Copper Corp. (Nevada Mines Division) and the Morris Brooks and Ruth Pit Extension pits, operated by the Consolidated Coppermines Corp. Small shipments of copper ore were made from other properties and some production resulted from materials treated mainly for other metals. Kennecott continued to develop the Deep Ruth underground mine and to project plans for opening the Veteran pit. All of the foregoing properties are in the Robinson district, White Pine County. The Anaconda Copper Mining Co. pursued development of the Yerington mine, Lyon County, not scheduled for production before the end of 1953.

New Mexico. - New Mexico was the third most important copper-producing State in 1952. Production was 5 percent more than in 1951 and exceeded output in any year except 1942. By far the largest producer was the Chino open-pit mine of the Kennecott Copper Corp. (Chino Mines Division) at Santa Rita, which operated continuously 7 days a week throughout the year. Copper was also produced at the Banner-Miser's Chest group of the Banner Mining Co., the Atwood mine near Lordsburg, and some fluxing ore was shipped from the Stauber open-pit. Copper ore mined was at a record rate in 1952 - 8,390,000 tons compared with 8,024,111 in 1951.

Utah. - Utah easily maintained its rank as the second most important copper-producing State, accounting for nearly three-quarters as much copper as Arizona and nearly 4 times as much as New Mexico, ranking first and third, respectively. Most of the copper production is derived from copper ore produced at the Utah Copper open-pit. (Kennecott Copper Corp.), at Bingham, which operated continuously throughout the year and is regularly the leading copper-producing mine in the United States. Among other Utah properties, only the United States & Lark group produced more than 500 tons of copper. These two mines accounted for more than 99 percent of the State total. More than 97 percent of the total ore mined and treated - 33,000,000 tons in 1952 compared with 31,356,837 in 1951 - was copper ore.

Washington. - The increase of 11 percent in Washington in 1952 - 4,525 tons compared with 4,089 in 1951 - resulted from increased output at the Holden mine of the Howe Sound Co.

Mine production of recoverable copper in the United States 1948-1952, by States, in short tons

Region and State	1948	1949	1950	1951	1952
States east of the Mississippi:					
Michigan	27,777	19,506	25,608	24,979	21,812
Other	14,248	13,449	14,497	16,140	14,946
	42,025	32,955	40,105	41,119	36,758
Missouri	2,370	3,670	2,982	2,422	1,726
Western States:					
Arizona	375,121	359,010	403,301	415,870	393,350
California	481	649	646	921	820
Colorado	2,298	2,403	3,141	3,212	3,388
Idaho	1,624	1,438	2,107	2,160	3,023
Montana	58,252	56,611	54,478	57,406	63,320
Nevada	45,242	38,058	52,569	56,474	57,040
New Mexico	74,687	55,388	66,300	73,558	77,000
Oregon	2	20	19	11	1
Texas	23	24	2	1	18
Utah	227,007	197,245	278,630	271,086	283,500
Washington	5,665	5,275	5,057	4,089	4,525
	790,402	716,121	866,250	884,788	885,985
Alaska	16	4	6	1	-
Total United States	834,813	752,750	909,343	928,330	924,469

Mine production of recoverable copper in the United States in 1952, by months 1/, in short tons

Region and State	January	February	March	April	May	June	July	August	September	October	November	December	Total
States east of the Mississippi:													
Michigan	2,328	2,045	1,947	2,309	2,182	2,078	2,431	2,120	531	334	1,464	2,043	21,812
Other	1,443	1,215	1,349	1,165	1,359	933	1,030	1,323	1,215	1,370	1,234	1,310	14,946
	3,771	3,260	3,296	3,474	3,541	3,011	3,461	3,443	1,746	1,704	2,698	3,353	36,758
Missouri	184	146	170	165	158	140	130	131	159	130	107	106	1,726
Western States:													
Arizona	35,165	31,115	35,640	34,695	34,685	28,990	29,980	27,430	31,830	34,555	34,545	34,720	393,350
California	70	70	70	90	90	80	60	60	50	60	60	60	820
Colorado	232	271	335	306	273	288	336	332	286	285	227	217	3,388
Idaho	235	226	225	218	233	204	243	290	280	369	250	250	3,023
Montana	4,407	4 891	5,683	5,124	4,796	5,204	5,472	5,840	4,900	5,355	5,512	6,136	63,320
Nevada	3,370	4,270	4,140	5,370	5,520	5,190	5,290	4,950	5,010	4,960	4,300	4,670	57,040
New Mexico	6,900	6,448	6,784	7,108	7,283	5,971	6,339	6,525	6,409	6,432	5,751	5,000	77,000
Oregon	..	.	..	..	.	..	..	..	1	..	..	..	1
Texas	-	1		3	3	4	5	2	..	-	..	-	18
Utah	22,935	21,660	22,405	23,635	25,265	24,500	24,615	24,770	23,850	24,900	22,000	22,955	283,500
Washington	401	333	481	340	380	341	303	393	386	457	280	430	4,525
	73,715	69,285	75,763	76,889	78,528	70,772	72,693	70,592	73,002	77,373	72,925	74,448	885,985
Alaska 2/	.	.	..	..	.	..	..	..	..	.	..	..	..
Total United States	77,670	72,691	79,229	80,528	82,227	73,923	76,284	74,166	74,907	79,207	75,730	77,907	924,469

1/ Revised figures.
2/ Alaska monthly totals based on smelter receipts.

Interior Duplicating Section, Washington, D. C.

Prepared 1/26/53

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MINERAL INDUSTRY SURVEYS
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
DOUGLAS McKAY, Secretary J. J. FORBES, Director

FOR RELEASE FEBRUARY 2, 1953

MINERAL MARKET REPORT
MMS NO. 2134

SLATE PRODUCTION DECLINED IN 1951

The domestic production of slate in 1951 was a little lower than in 1950, but the decline was primarily in sales of granules and flour. According to figures compiled by the Bureau of Mines, United States Department of the Interior, from reports furnished by slate producers, total production was 825,700 short tons valued at $13,895,711. These totals represent declines of 11 percent in quantity and 8 percent in value.

Sales of roofing slate during the year amounted to 205,120 squares (197,570 squares in 1950), valued at $4,357,412 ($4,098,842 in 1950). The average value per square in 1951 was $21.24 - 49 cents per square higher than in 1950. Gains were confined to the Pennsylvania operations; sales in other regions declined.

Mill-stock sales declined slightly in quantity and value from the high record of 1950. The principal decline was in sales of blackboards and bulletin boards. Sales of structural and sanitary, electrical, billiard-table tops, and vaults and covers increased substantially. School-slate sales declined in quantity but increased in value.

Flagstones, including slate employed for walkways, stepping stones, and miscellaneous uses, declined 1 percent in quantity but gained 13 percent in value.

The production of granules and flour totaled 654,550 short tons valued at $5,888,001 - a decline of 14 percent in quantity and 21 percent in value.

There were 77 slate producers in 1951 - 17 less than in 1950. They were distributed by States as follows: 25 in Pennsylvania, 22 in Vermont, 19 in New York, 5 in Virginia, 2 in California, and 1 each in Arkansas, Georgia, Maine and Maryland.

The accompanying table presents the salient statistics of the industry for the past 2 years.

Prepared by Oliver Bowles and Nan C. Jensen, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division

Salient Statistics of the Slate Industry in the United States, 1950-51

	1950			1951			Percent of change in -	
	Quantity			Quantity				
	Unit of measurement	Approximate equivalent short tons	Value	Unit of measurement	Approximate equivalent short tons	Value	Quantity (unit as reported)	Value
Domestic production (sales by producers):	Squares			Squares				
Roofing slate.............	197,570	74,060	$4,098,842	205,120	77,500	$4,357,412	+4	+6
Mill stock:	Sq. ft.							
Electrical slate.........	285,600	2,070	424,879	326,090	2,350	470,179	+14	+11
Structural and sanitary slate................	1,031,180	8,200	768,602	1,250,810	9,910	836,492	+21	+9
Grave vaults and covers..	2,730	20	2,507	12,880	110	10,681	+372	+326
Blackboards and bulletin boards................	1,420,960	3,290	829,510	1,133,770	2,660	667,011	-20	-20
Billiard table tops......	161,030	1,190	95,996	207,490	1,560	131,081	+29	+37
School slates............	1/279,100	370	8,936	1/237,500	300	11,943	-15	+34
Total mill stock.......	3,180,600	15,140	2,130,430	3,168,540	16,890	2,127,387	...	...
Flagstones, etc.2/.........	12,346,248	79,440	1,342,053	12,183,280	76,760	1,522,911	-1	+13
Total slate as dimension stone.....................	....	168,640	7,571,325	....	171,150	8,007,710	+1	+6
Granules and flour..........	....	761,730	7,476,156	....	654,550	5,888,001	-14	-21
Grand total domestic production.........	....	930,370	15,047,481	....	825,700	13,895,711	-11	-8

1/ Square feet approximate. Number of pieces: 1950, 389,087; 1951, 395,000.

2/ Includes slate used for walkways, stepping stones, and miscellaneous uses.

Interior Duplicating Section--Washington 25, D. C.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

Douglas McKay, Secretary J. J. Forbes, Director

FOR IMMEDIATE RELEASE

MINERAL MARKET REPORTS
MMS NO. 2135

TITANIUM IN 1952
(Preliminary)

The titanium industry featured record titanium sponge production in 1952. Titanium pigment production decreased to about the 1950 level. Ilmenite production remained the same as in 1951 and ilmenite imports for the first eleven months of 1952 dropped below the corresponding period in 1951. Rutile production decreased slightly under the 1951 figure; whereas, rutile imports for the first eleven months in 1952 increased over the same period in 1951. Market prices on ilmenite and rutile increased in 1952 over 1951.

Titanium Metal. - Commercial titanium sponge production in 1952 is estimated at 1,100 short tons, approximately double the 1951 output, coming from plants operated by E. I. du Pont de Nemours and Company at Newport, Delaware; Titanium Metals Corporation of America at Henderson, Nevada; and the Crane Company at Chicago, Illinois. The Bureau of Mines continued process research at its Boulder City, Nevada, pilot plant and physical metallurgy research on titanium metal at the College Park, Maryland, laboratory. High purity titanium (99.99 percent Ti) was produced, by thermal decomposition of volatile titanium iodides, by the Foote Mineral Company, Philadelphia, Pennsylvania, throughout the year 1952 and by the New Jersey Zinc Company, Palmerton, Pennsylvania, in the first quarter of 1952. Titanium alloyed and unalloyed mill products were manufactured by the Titanium Metals Corporation of America, New York; Rem-Cru Titanium Incorporated, Midland, Pennsylvania; Mallory-Sharon Titanium Corporation, Niles, Ohio; and Republic Steel Corporation, Cleveland, Ohio. Titanium tubing was supplied by the Superior Tube Company, Norristown, Pennsylvania, and the Trent Tube Company, East Troy, Wisconsin, in unalloyed grades.

At the National Metal Exposition, in October 1952, at Philadelphia, Pennsylvania, a titanium ingot weighing 4,000 pounds and a continuous sheet of titanium coil .015 inch thick, 460 feet long and worth $12,000 were displayed for the first time. A model of the J-47 Air Force engine highlighted the uses of titanium in blades, casings, compressor wheels, and other components. Titanium was displayed also in the following forms: .38 caliber paratrooper's pistol, filters, cutting tools, valves, and other machine parts. An organic bonding agent ideal for low-heat bonding of titanium was revealed and also parts drawn from commercially pure titanium were demonstrated.

New organizations were formed in 1952. The Titanium Company of America at East Chicago, Indiana, chartered in Delaware, was organized by the

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Prepared by A. F. Tumin, under the supervision of F. J. Cservenyak, Chief, Light Metals Branch, Minerals Division.

Christiansen Corporation of Chicago, Illinois, for the manufacture of wrought products from titanium. The Glidden Company of Cleveland, Ohio, and Bohn Aluminum and Brass Corporation of Detroit, Michigan, combined their research facilities to develop methods for the production of pure titanium and its alloys. It was also reported that research studies will be conducted in Glidden's laboratory at Baltimore, Maryland, and in Bohn's laboratory at Detroit, Michigan. A pilot plant was constructed by Kennecott Copper Corporation at the Battelle Memorial Institute, Columbus, Ohio, to evaluate a new process for the production of titanium metal. Research was continued by the Bureau of Mines Boulder City, Nevada, laboratory on processes for producing titanium metal at lower costs and with better control of metal quality; and research was initiated in the latter part of 1952 on the chlorination of titanium slag from Sorel, Canada.

The Defense Production Authority, in November 1952, set its goal for production of commercial titanium sponge at 22,000 short tons per year by the end of 1955. The Titanium Metals Corporation of America signed a letter of intent in August 1951 for the construction and operation of a plant at Henderson, Nevada, to produce 3,600 tons of titanium per year for five years. An advance of $15,000,000 was made to Titanium Metals Corporation of America by the Government to carry on this work. One year later, (July 28, 1952) the Defense Materials Procurement Agency contracted with E. I. du Pont de Nemours and Company, Wilmington, Delaware, for additional production of 13,500 short tons of titanium sponge during the next five years. The Government will advance the company $14,700,000 to increase the capacity of its Newport, Delaware, plant to 10 tons per day. The agreement with DuPont is similar to one that the Government made with Titanium Metals Corporation of America in August 1951; whereby, the loan, plus interest of four percent per annum on the unpaid balance, is repayable either in dollars or in titanium metal.

The revolving-fund purchase and resale program, established by General Services Administration in August 1951 to maintain capacity operation of sponge-manufacturing facilities during the development period of military applications, continued throughout 1952 in order to assure an increased supply of titanium and the utilization of such supply in the manner most advantageous to the National Defense. The revolving fund contained $5,000,000 for the purchase and resale of not more than one million pounds of titanium sponge at a price not to exceed $5 per pound. The following specifications were set up for purchase of titanium sponge under this program: titanium 99.3 percent minimum; iron 0.25 percent maximum; nitrogen 0.03 percent maximum; magnesium 0.10 percent maximum; chlorine 0.15 percent maximum; and Vickers hardness number 250 (Brinell hardness number 225) maximum. The first contract to sell titanium sponge to the Government under this program was negotiated in 1951 between E. I. du Pont de Nemours and Company, Wilmington, Delaware, and G. S. A., with the expiration date being March 15, 1952; however, this contract was extended to December 31, 1952, at the company's request, and in the latter part of 1952, negotiations were made for the continuation of this program, with revised specifications, until December 1953. E. I. du Pont de Nemours and Company sold to the Government, as of December 31, 1952, 303 short tons of titanium sponge. Five tons of metal, that was placed in the revolving fund stockpile October 21, 1951, was resold to Rem-Cru Titanium Incorporated, Midland, Pennsylvania, in September 1952, and was reported satisfactory for production of milled products. As of October 15, 1952, 280 short tons of titanium sponge sold by DuPont contained the following average quality, based on analysis by the manufacturer and confirmed by the

Bureau of Mines for G. S. A.: titanium 99.64 percent; iron 0.16 percent; nitrogen 0.025 percent; magnesium 0.04 percent; chlorine 0.11 percent; and Brinell hardness number 172. The revolving fund stockpile is intended as a temporary reserve of titanium sponge available for resale and is in no way connected with the national stockpile. Negotiations were under way at the end of 1952 between Defense Materials Procurement Agency and Titanium Metals Corporation of America for inclusion of that company under a similar purchase and resale program.

Titanium Pigments. - Titanium pigment production and shipments in 1952 decreased 5 and 16 percent, respectively, under 1951, as production dropped to about the 1950 level and shipments fell to near the 1948 figure. Titanium pigments were produced by the American Cyanamid Company, Calco Chemical Division, Bound Brook, New Jersey; Chemical and Pigment Company, Division of the Glidden Company, Baltimore, Maryland; E. I. du Pont de Nemours and Company, Wilmington, Delaware; and the National Lead Company, New York, New York.

Ilmenite and Rutile. - Domestic ilmenite production in 1952 totaled 537,000 short tons (273,000 tons TiO_2) and remained about the same as the 1951 output. Shipments totaled 523,000 short tons (266,000 tons TiO_2) and increased slightly over 1951. Ilmenite was produced by the National Lead Company, Tahawus, New York, which continued to be the world's largest ilmenite producer; Florida Ore Processing Company, Melbourne, Florida, which tripled its 1951 production; Baumhouf-Marshall Incorporated, Boise, Idaho, which doubled its 1951 recovery of ilmenite from the monazite operations. E. I. du Pont de Nemours and Company at Starke, Florida; Rutile Mining Company of Florida at Jacksonville, Florida; American Cyanamid Company at Piney River, Virginia; and the Yadkin Mica and Ilmenite Company at Finley, North Carolina, showed slight decreases in ilmenite production in 1952. The product produced by E. I. du Pont de Nemours and Company at Starke, Florida, classified as ilmenite, included a mixed product containing ilmenite, rutile, and leucoxene. The Glidden Company, Cleveland, Ohio, reported that its plant, Yadkin Mica and Ilmenite Company, Finley, North Carolina, ceased production of ilmenite in October 1952.

Rutile production in the United States in 1952 decreased slightly under 1951 output. Rutile was produced in 1952 by the Rutile Mining Company of Florida at Jacksonville, Florida, and the Florida Ore Processing Company at Melbourne, Florida. Domestic production figures on rutile are not published due to the fact that it would disclose operations of the major producer.

Domestic production of ilmenite and rutile, in short tons

Year	Ilmenite		Rutile	
	Production	Shipments	Production	Shipments
1947	336,533	336,061	8,562	5,157
1948	383,508	381,508	7,380	9,907
1949	402,334	389,234	1/ 11,988	1/ 10,559
1950	1/ 468,320	1/ 452,370	(2)	(2)
1951	1/ 535,835	1/ 510,840	(2)	(2)
1952 3/	1/ 537,000	1/ 523,000	(2)	(2)

1/ Includes a mixed product containing altered ilmenite, rutile, and leucoxene.

2/ Bureau of Mines not at liberty to publish.

3/ Estimated totals with ten months' actual figures included.

Titanium Slag. - Titanium slag was produced in 1952 by the Quebec Iron and Titanium Corporation, a subsidiary of the New Jersey Zinc Company and the Kennecott Copper Corporation, at Sorel, Canada, Province of Quebec. The Quebec Iron and Titanium Corporation reported that 43,400 and 38,800 short tons of titanium slag (about 70 percent TiO_2) was produced and shipped, respectively, in 1952. The United States received all of the titanium slag shipped with the exception of 100 tons that was sent to England.

Imports. - Ilmenite, imported into the United States from Canada and India from January through November 1952, totaled 162,063 short tons, a decrease of 26,175 short tons under the receipts for the same period in 1951. India remained the dominant supplier. Imports from Canada included titanium slag.

Imports of rutile from Australia, sole supplier since 1947, were reported at 17,305 short tons in the first eleven months of 1952, an increase of 6,560 short tons over receipts for the same period in 1951.

Prices. - Quotations per gross ton for ilmenite, containing 56 to 59 percent TiO_2, f.o.b. Atlantic seaboard were $16 to $18 at the start of 1952 and increased to $16 to $20 in March and to $18 to $20 in April, at which level the price of ilmenite remained for the rest of the year. All quotations were nominal.

Nominal quotations for rutile guaranteed minimum 94 percent concentrates were 5 1/4 to 6 1/4 cents per pound at the beginning of the year and decreased on January 3, 1952, to 3 1/2 to 4 1/2 cents per pound and then increased during the year as follows: 4 to 5 cents at the end of January, 5 to 7 cents in March, 6 to 8 cents in April, 7 to 8 cents in September and 7 to 8 1/2 cents a pound in November 1952 where they remained for the rest of the year.

35204 Interior - Duplicating Section, Washington, D.C.

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MINERAL INDUSTRY SURVEYS
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
DOUGLAS McKAY, Secretary
J. J. FORBES, Director

FOR IMMEDIATE RELEASE

MINERAL MARKET REPORT MMS NO. 2136
(Replaces November and December
monthly reports 103 and 104)

MINE PRODUCTION OF GOLD IN THE UNITED STATES IN 1952
PRELIMINARY ANNUAL FIGURES

Mine output of recoverable gold declined 5 percent in 1952 as compared with 1951, according to the Bureau of Mines, United States Department of the Interior. The change in the production rates of the principal gold-producing States showed wide variation. Outputs of Colorado, South Dakota, and Utah were up 3, 6, and 1 percent, respectively. Outputs of Arizona, California, Idaho, Montana, Nevada, Washington and Alaska declined 2, 25, 25, 6, 3, 21, and 3 percent, respectively. The Treasury buying price for gold continued at $35.00 per fine troy ounce.

South Dakota maintained its customary position of the leading gold-producing State, and Utah continued in its usual rank of second. California in third place continued to lead Alaska in fourth, but by a narrow margin. Virtually all of the gold production of South Dakota and Alaska, as well as most of that of California is recovered from straight gold mining operations. Most of the remainder of the United States output of gold is recovered as a by-product of base-metal ores.

This report which summarizes mine output for 1952 is part of the regular monthly gold mine production series. As preliminary figures for November and estimates for December are included, the report serves for both these months and the next issue will be for January 1953. The following table and State reviews for 1952 were obtained from current preliminary reports of the Regional offices of the Bureau of Mines, a procedure followed in the preparation of all the reports in the series. The figures are given in terms of recoverable gold content of ores and concentrates.

Alaska. - With a drop of 3 percent in output in 1952 compared with 1951, gold production in Alaska declined for the second successive year. This decline resulted from cessation of activities at some gold mining operations and curtailment at others because of the high cost of labor and supplies. In certain instances it was more profitable for operators to rent their mechanical equipment (draglines and bulldozers for construction work on Government projects than to use such machines for mining. Nearly all the total Alaska gold output of 1952 came from placer mining, mostly by bucket-line dredging. The principal gold producer in Alaska in 1952 was the United States Smelting, Refining & Mining Co., which operated 6 dredges in the Fairbanks district and 3 dredges in the Nome district. Activity at lode mines was limited largely to 3 small operations in the Willow Creek district, one in the Fairbanks district, and one in the Nome district. The reworking of old tailings from the Alaska Juneau mill on the Gastineau Channel in the Juneau district continued on a small scale.

Prepared by James E. Bell under the supervision of M. H. Kline, Chief, Rare and Precious Metals Branch, Minerals Division.

Arizona. - Gold production in Arizona in 1952 dropped 2 percent below that of the preceding year. The output of by-product gold from copper ore was somewhat greater but this increase was more than offset by a decrease of by-product gold fr zinc-lead ore and zinc-copper ore. About 75 percent of the Arizona gold production of 1952 was recovered from copper ore mined at Ajo, Bisbee, Jerome, Superior, Morenci, Ray, and Miami. The remainder came largely from zinc-lead ore mined in the Big Bug district and from zinc-copper ore mined in the Pioneer (Superior) and Verde (Jerome) districts. The largest producers of gold in Arizona in 1952 were the New Cornelia, Copper Queen, Iron King, Magma, Morenci, and United Verde mines; these 6 properties produced 92 percent of the State total. An estimated 75 ounces of gold were recovered in placer operations.

California. - The output of gold in California in 1952 was 25 percent below that of 1951 and was the lowest since 1945; despite this decrease, California maintained its rank of third in gold production, exceeded only by South Dakota and Utah. The drop in output reflected the diminishing return from placer deposits and the waning in lode gold mining caused by rising costs and the fixed price of gold. Placer mining supplied about 56 percent of the State's total gold in 1952, the same as in 1951. The principal producers of placer gold were bucket-line dredges of Natomas Co., American River district, Sacramento County; Yuba Consolidated Gold Fields, Yuba River district, Yuba County and Oroville district, Butte County; Fairview Placers, Trinity River district, Trinity County; Capital Dredging Co., American River district, Sacramento County; and Snelling Gold Dredging Co., Merced River district, Merced County. The principal producers of lode gold in 1952 were the Idaho Maryland Mines Corporation, Brunswick-Idaho Maryland mine and the Empire Star Mines Co., Ltd., Empire Star group, both companies working gold ore in the Nevada City-Grass Valley district, Nevada County.

Colorado. - Production of gold in Colorado in 1952 rose 3 percent above the 1951 level, reflecting full-year operations and improved efficiency at the new Carlton custom gold ore mill of the Golden Cycle Corporation, Cripple Creek district, Teller County. Greater output from this source more than offset a large drop in yield from placer mines caused principally by the shutdown early in the year of the gold dredge of the South Platte Dredging Co. near Fairplay, Park County. As has been normal in recent years, however, most of the State's gold output of 1952 was derived from complex base-metal ores. The five leading producers of gold in 1952 were, in order of output, the Ajax group (Golden Cycle Corp.) at Cripple Creek, Treasury Tunnel-Black Bear group (Idarado) in San Miguel County, Resurrection group at Leadville, Smuggler Union group (Telluride Mines) at Telluride, and Cresson group at Cripple Creek.

Eastern States. - The output of gold in 1952 was 20 percent less than in 1951. Virtually all the gold currently produced in this region is recovered as a by-product of copper ore mined in Tennessee, Pennsylvania, and Vermont.

Idaho. - With a decline of 25 percent in output in 1952 compared with that of 1951, gold production in Idaho dropped sharply for the second consecutive year. The decrease reflected the gradual closing of the Bradley Mining Co. gold-antimony operations at Stibnite, the principal gold producer of the State, because of declining prices of antimony. Other important lode gold producers were the Talache Mines, Inc. at Atlanta and the Triumph Mining Co. in the Warm Springs district. Placer mining operations by bucket-line and dragline dredging in Custer County and Idaho County contributed 11 percent of the total gold output of the State.

Montana. - Montana's gold production in 1952 was 6 percent below that in 1951, and continued a downtrend that started in 1948. Base metal ores and gold-silver ores were the chief sources of the State's gold yield. The leading gold producers were the Anaconda Copper Mining Company's zinc operations at Butte Hill, Silver Bow County; the McLaren Gold Mines Company's Estelle mines, New World district, Park County; and the Anaconda Copper Mining Company's copper operations at Butte Hill. These operation accounted for nearly three-fourths of the State's total gold output of 1952.

Nevada. - The gold production of Nevada declined 3 percent in 1952 compared with that of the preceding year. By sources, 55 percent of the total was recovered as a by-product of base-metal ores, 30 percent by placer mining, and 15 percent from precious-metal ores. The principal producers in Nevada in 1952 were, in order, the Kennecott Copper Corporation (copper ore), Robinson district, White Pine County; Natomas Co. (bucket-line dredge), Battle Mountain district, Lander County; Consolidated Copper Mines Corp. (copper ore), Robinson district, White Pine County; The London Extension Mining Company (gold ore), Bullion district, Lander County; and the Round Mountain Gold Dredging Co. (mechanical conveyor), Round Mountain district, Nye County, which suspended its operations in September 1952.

New Mexico. - Gold production in New Mexico was 27 percent less in 1952 than in 1951. There was little activity in straight gold mining owing to the high cost of labor and materials in relation to the fixed price of gold. Most of the State gold was recovered from base-metal ores mined in the Central and Lordsburg districts. None of the individual mines was an outstanding producer of gold.

Oregon. - With a decline in gold output of 32 percent in 1952 from 1951, gold production in Oregon showed a sharp decline for the third successive year. About 90 percent of the gold yield of Oregon of 1952 was recovered by placer operations. Bucket-line dredging near Sumpter, Baker County, accounted for 73 percent of the total State gold. The principal producers of lode gold ore were the Buffalo mine, Grant County; and the Champion mine, Lane County.

South Dakota. - The gold output of South Dakota rose 6 percent in 1952 over the year-earlier level, and South Dakota again maintained its rank as the leading gold producer. The Homestake mine at Lead was the dominant producer. New crushing units replacing stamps were added during the year; no labor difficulties were experienced. The Bald Mountain Mining Company operated its Portland, Dakota, and Clinton group of mines at Trojan and 370 ton all-sliming cyanide mill continuously during the year. Minor quantities of gold were recovered as a by-product of small base-metal mining operations.

Utah. - Gold production in Utah rose one percent in 1952 compared with 1951, and the State easily maintained its rank of second in gold production, exceeded by only South Dakota. Virtually all of Utah's gold output is obtained as a by-product of base-metal ores. Of the total gold produced in 1952, 92 percent was recovered from copper ore and 7 percent from zinc-lead ore. About 96 percent of the State output of 1952 came from the West Mountain (Bingham) district.

Washington. - The gold output of Washington declined 21 percent in 1952 below that of 1951, showing a sharp drop for the second consecutive year. The decrease was due mainly to less production by the Gold King mine in Chelan County. The Holden mine of the Howe Sound Co. in Chelan County ranked first in the State gold output, followed by the Knob Hill mine in Ferry County and the Gold King mine. These 3 mines together furnished 99 percent of the State's total gold.

Mine production of recoverable gold in the United States in 1952, by months 1/, in fine ounces

Region and State	January	February	March	April	May	June	July	August	September	October	November	December	Total
Eastern States....	209	184	212	178	195	38	59	220	156	181	151	165	1,948
Western States:													
Arizona.........	9,175	9,650	10,165	10,155	10,070	9,275	8,140	7,600	9,275	10,240	9,655	10,100	113,500
California......	23,862	24,454	22,820	23,446	22,977	20,844	21,232	21,021	19,574	17,543	17,829	17,949	253,553
Colorado........	8,259	7,725	10,427	9,770	11,150	12,063	13,423	11,002	9,343	10,801	8,002	8,035	120,000
Idaho...........	3,448	2,746	3,016	3,925	4,062	3,660	3,812	1,734	1,853	1,962	1,800	1,800	33,818
Montana.........	1,530	1,782	1,568	1,699	1,943	3,504	2,873	3,119	2,810	2,646	2,552	2,645	28,671
Nevada..........	5,579	7,864	9,122	10,014	10,332	11,687	11,674	12,190	11,829	10,209	8,149	8,431	117,080
New Mexico......	173	363	246	259	120	255	303	291	210	209	260	211	2,900
Oregon..........	485	445	327	215	639	459	476	609	481	480	350	448	5,414
South Dakota....	37,114	34,705	35,643	35,332	43,267	43,614	41,796	44,174	46,034	40,294	40,993	41,590	484,556
Texas...........	—	—	—	8	10	7	5	3	—	3	3	—	39
Utah............	37,060	32,615	36,255	36,615	39,445	35,380	38,255	39,140	34,915	37,730	34,560	35,630	437,600
Washington......	4,340	3,912	4,558	4,416	4,369	5,130	4,206	4,564	4,650	4,783	4,000	4,600	53,528
Wyoming.........	—	—	—	—	—	—	1	—	—	—	—	—	1
	131,025	126,261	134,147	135,854	148,384	145,880	146,196	145,447	140,974	136,900	128,153	131,439	1,650,660
Alaska 2/.........	7	—	209	27	2,505	9,489	34,378	44,781	44,781	41,895	40,356	15,000	233,428
Total United States....	131,241	126,445	134,568	136,059	151,084	155,407	180,633	190,448	185,911	178,976	168,660	146,604	1,886,036

1/ Revised figures.
2/ Alaska monthly totals based on mint and smelter receipts.

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MINERAL MARKET REPORT NO. 2137
(Replaces November and December
monthly reports 103 and 104)

MINE PRODUCTION OF SILVER IN THE UNITED STATES IN 1952
PRELIMINARY ANNUAL FIGURES

Mine production of recoverable silver was 2 percent less in 1952 than in the preceding year, according to the Bureau of Mines, United States Department of the Interior. Gains of 1 and 13 percent in Colorado and New Mexico, respectively, were more than offset by declines of 10, 3, 4, 4, and 1 percent in Arizona, California, Montana, Nevada, and Utah, respectively; silver production in Idaho was virtually the same in 1952 as in 1951. The Treasury buying price for silver domestically mined after July 1, 1946 remained at $0.905+ per fine troy ounce throughout the year.

Idaho continued its rank as the leading silver-producing State, followed by Utah, Montana, and Arizona, an order unchanged since 1943. Most of Idaho's silver (approximately 67 percent in 1952) comes from silver ore. Virtually all the remainder of the domestic output of silver is recovered as a by-product of base-metal ores and gold ores.

This report which summarizes mine output for 1952 is part of the regular monthly silver mine production series. As preliminary figures for November and estimates for December are included, the report serves for both these months and the next issue will be for January 1953. The following table and State reviews for 1952 were obtained from current preliminary reports of the Regional offices of the Bureau of Mines, a procedure followed in the preparation of all the reports in the series. The figures are given in terms of recoverable silver content of ores and concentrates.

Alaska. - Alaska's silver production was 3 percent less in 1952 than in 1951. Virtually all of the silver output was recovered as a by-product of gold mining, mostly bucket-line dredging in the Fairbanks and Nome districts. The Riverside mine in the Hyder district, usually a source of by-product silver from lead ore, was inactive for the second consecutive year.

Arizona. - The Arizona production of silver in 1952 declined 10 percent below that of the year-earlier level and was the lowest since 1947. Most of the State output of silver is recovered as a by-product of base-metal mining operations. The decrease in 1952 resulted from a lower average silver content of the ore mined. Approximately 81 percent of the production in 1952 came from the Copper Queen, Morenci, New Cornelia, and United Verde mines.

Prepared by James E. Bell under the supervision of M. H. Kline, Chief, Rare and Precious Metals Branch, Minerals Division.

California. - Silver production in California was 3 percent less in 1952 than in 1951. Most of the silver output of the State is recovered as a by-product of zinc ore and zinc-lead ore. The leading producers were the Anaconda Copper Mining Company's Darwin group, Coso district and their Shoshone group, Resting Springs district, both in Inyo County; the Coronado Copper and Zinc Company's Afterthought mine, Cow Creek district, Shasta County; and the New Penn Mines, Inc., Penn mine, West Belt district, Calaveras County.

Colorado. - Silver production in Colorado was slightly greater (one percent) in 1952 than in 1951. Most of the State's silver was recovered as a by-product of complex base metal ores. The leading producers of silver were, in order of output, the Treasury Tunnel-Black Bear (Idarado) group in San Miguel County, the Eagle mine at Gilman, Resurrection group at Leadville, Caribou mine at Nederland, and Shenandoah-Dives group near Silverton.

Eastern States. - Silver production from mines in the Eastern States was 24 percent greater in 1952 than in 1951. All the silver was recovered as a by-product of copper ore and lead ore mined in Pennsylvania, Tennessee, Vermont and New York.

Idaho. - The silver output of Idaho was virtually the same in 1952 as in 1951, and Idaho easily maintained its rank as the leading silver producer. Approximately 67 percent of the State total was recovered from silver ores and 31 percent from zinc-lead ores. Sunshine Mining Co., operating its own mine and the properties of six other mining companies in the Coeur d'Alene region was the largest producer; it was followed, in order, by the Bunker Hill and Sullivan Mining and Concentrating Co., Silver Summit mine of the Polaris Mining Co., Triumph Mining Co., and the Page mine and Morning mine of the Federal Mining and Smelting Co. About 90 percent of Idaho's silver production of 1952 was produced from mines in the Coeur d'Alene region.

Missouri. - Silver is recovered in Missouri as a by-product in the smelting of lead ores produced in the Southeastern part of the State. The recovery of silver from this source varies from year to year depending on how much of the lead is desilverized. The recovery of silver in 1952 was 112 percent greater than that of 1951.

Montana. - Although silver production was 4 percent less in 1952 than in the preceding year, Montana held its accustomed position of third in silver production, exceeded only by Idaho and Utah. The drop was due largely to a lower yield of silver from the zinc and dump ore treated at the Butte Hill operations of the Anaconda Copper Mining Company. Approximately 88 percent of the State total silver was recovered from the zinc-lead and copper ores of the Anaconda operations at Butte Hill, Silver Bow County.

Nevada. - With a drop of 4 percent in output in 1952 compared to 1951, silver production in Nevada declined for the third consecutive year. By-product silver from base metal ores continued to be the main source of the State silver and the leading producers were: Combined Metals Reduction Company, Pioche and Comet districts, Lincoln County (lead-zinc ore); Copper Canyon Mining Co., Battle Mountain district, Lander County (zinc-lead ore); Kennecott Copper Corp., and Consolidated Copper Mines Corp., Robinson district, White Pine County (copper ore). Straight silver ore was mined at the Mohawk (Argentite) mine, Silver Peak district, Mineral County; and at the Pyramid mine, Holy Cross district, Churchill County.

New Mexico. - Silver production in New Mexico rose 13 percent in 1952 over 1951, thus scoring a large gain for the second consecutive year. The increase resulted from the mining of large tonnages of base-metal ores that yield silver as a by-product. Properties that produced substantial amounts of silver included the Ground Hog and Bayard zinc-lead mines in Grant County, the Lynchburg zinc-lead mine in Socorro County, and the Bonney-Miser's Chest and Atwood copper mines in Hidalgo County.

Oregon. - The silver output of Oregon was 37 percent less in 1952 than in 1951. Of the State total silver, 68 percent came from lode ore from the Buffalo mine, Grant County, and 21 percent from placer mining near Sumpter, Baker County.

South Dakota. - Silver production in South Dakota is incidental to gold mining. The silver yield in South Dakota was up one percent in 1952 from 1951 paralleling the rise in gold output but to a less degree.

Utah. - The silver output of Utah was slightly less (one percent) in 1952 than in 1951, reflecting the closing during several months of the year of 3 large producers of silver. In 1952 about 46 percent of the total silver was recovered from copper ore, 44 percent from zinc-lead ore, and the remainder principally from gold-silver ore, silver ore, and lead ore. About 75 percent of the State silver output of 1952 came from the West Mountain (Bingham) district, 12 percent from the Park City region, and 9 percent from the Tintic district. The Utah Copper mine was by far the largest producer of silver in Utah in 1952; it was followed by the United States & Lark group, Chief Consolidated mine, Butterfield group, New Park property, West Calumet mine, Park Utah Consolidated property, and Silver King Coalition mine.

Washington. - Silver production in Washington dropped 13 percent in 1952, owing to smaller output of by-product silver from gold ores and base metal ores. The Knob Hill mine, Ferry County; Holden mine, Chelan County; and the Bonanza mine, Stevens County were the principal producers. About 55 percent of the State's total silver was recovered from gold ore, 30 percent from zinc-copper ore, and most of the remainder from lead and zinc-lead ores.

Mine production of recoverable silver in the United States in 1952, by months 1/, in fine ounces

Region and State	January	February	March	April	May	June	July	August	September	October	November	December	Total
Eastern States..	14,888	13,631	14,610	13,788	15,825	11,814	9,268	10,592	12,449	13,939	13,542	13,658	158,004
Illinois........	285	323	352	366	300	354	285	316	241	395	260	231	3,708
Missouri........	37,787	33,055	32,871	34,180	31,332	31,516	32,713	29,371	31,808	36,343	30,382	30,349	391,707
Western States:													
Arizona........	417,865	438,200	423,310	430,355	440,050	384,750	301,000	324,000	346,000	363,170	363,000	373,800	4,605,500
California......	96,142	103,667	105,397	106,450	119,434	96,459	79,316	79,955	65,781	88,945	87,093	78,597	1,107,236
Colorado.......	200,048	239,970	268,122	249,497	259,962	213,113	260,691	256,362	231,314	221,104	209,119	206,267	2,815,569
Idaho..........	1,391,953	1,324,136	1,322,301	1,243,511	1,333,996	1,019,243	1,148,009	1,145,130	1,123,387	1,294,663	1,200,000	1,200,000	14,746,329
Montana........	506,390	490,080	522,068	493,173	520,116	538,543	492,392	521,409	488,973	526,405	483,072	555,493	6,138,114
Nevada..........	53,436	69,630	82,870	93,395	73,328	83,501	73,041	78,101	82,274	92,788	83,289	78,615	944,268
New Mexico.....	38,279	40,407	34,536	40,215	43,156	44,434	45,142	43,656	34,359	42,451	50,200	43,165	500,000
Oregon.........	100	91	64	41	959	76	90	801	243	228	75	1,172	3,940
South Dakota...	10,910	10,483	11,441	11,945	12,522	12,136	12,089	12,995	12,767	11,299	11,309	11,505	141,401
Texas..........	50	20	15	135	926	850	879	50	200	950	597	—	4,672
Utah...........	587,000	603,000	622,725	632,100	663,325	660,850	537,000	601,000	589,000	600,000	555,000	565,500	7,216,500
Washington.....	23,468	21,208	24,084	24,798	25,209	28,767	23,857	23,190	27,008	27,711	20,900	21,950	292,150
Wyoming........	—	—	—	—	—	—	—	—	—	—	—	—	—
	3,325,641	3,340,892	3,416,933	3,325,615	3,492,983	3,082,722	2,973,506	3,086,649	3,001,306	3,269,714	3,063,654	3,136,064	38,515,679
Alaska 2/........	288	—	27	1	293	1,243	4,526	5,678	6,389	5,559	5,821	2,000	31,825
Total United States...	3,378,889	3,387,901	3,464,793	3,373,950	3,540,733	3,127,649	3,020,298	3,132,606	3,052,193	3,325,950	3,113,659	3,182,302	39,100,923

1/ Revised figures.
2/ Alaska monthly totals based on mint and smelter receipts.

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MINERAL MARKET REPORT
MMS NO. 2139

CLAY PRODUCTION AND USES - 1951 SUMMARY

Clay production increased 10 percent in 1951, according to reports of producers to the Bureau of Mines, United States Department of the Interior.

Most users of clay registered increases. Decreases in 1951 from 1950 were shown by the following: high-grade tile, 13 percent; rubber, 15 percent; chemicals, 8 percent; filler other than paper or paint, 5 percent; plaster and plaster products, 31 percent.

Sales of both kaolin and ball clay in 1951 reached new highs in tonnage and value. Each showed an increase of 6 percent over the tonnage reported for 1950.

The kaolin use pattern remained essential the same as for the past several years, with the paper, rubber, refractories, and pottery industries the principal consumers. Paper consumed 964,601 short tons, or 52 percent, of the total kaolin output (533,490 short tons for filler and 431,111 for coating); rubber used 231,331 short tons, or 12 percent; refractories, 200,236 short tons, or 11 percent; and pottery, 141,733 short tons, or 8 percent. The remainder (17 percent) was consumed for a wide variety of purposes.

Over 77 percent of the ball clay sold in 1951 was consumed in the pottery industry. The quantity of ball clay used in whiteware increased 5 percent over 1950; that used in high-grade tile increased 10 percent; and that in refractories 16 percent over 1950.

Bentonite producers in 1951 enjoyed even a better year than the former banner year of 1950. Output increased 25 percent in tonnage and 52 percent in value over 1950. The foundry and petroleum industries accounted for 94 percent of total tonnage - rotary-drilling mud represented 38 percent (460,261 short tons); filtering and decolorizing of oils, 33 percent (397,940 short tons); and foundry sand bond, 23 percent (282,753 short tons).

Production of fuller's earth in 1951 established an all time high, exceeding the previous high year of 1950 by 22 percent. Fuller's earth consumed in mineral-oil refining in 1951 totaled 175,348 short tons, or 36 percent of the total output compared with 40 percent in 1950 and 47 percent in 1949. Absorbent uses accounted for 97,465 tons (20 percent of the total compared with 21 percent in 1950 and 22 percent in 1949); insecticides, 86,339 short tons (18 percent, compared with 18 percent in 1950 and 12 percent in 1949); rotary-drilling mud, 79,469 short tons (16 percent compared with 10 percent in 1950 and 9 percent in 1949); and vegetable oil, 20,251 tons, (4 percent compared with 5 percent in 1950 and 6 percent in 1949). The remainder was in other filtering and clarifying uses, binders, and unspecified uses.

Prepared by Brooke L. Gunsallus and B. V. Russ, under the supervision of W. F. Dietrich, Chief, Ceramic & Fertilizer Materials Branch, Minerals Division.
January 1953.

Clay sold or used by producers in the United States in 1951, by kinds and uses, in short tons.

Use	Kaolin	Ball clay	Fire clay and stone-ware clay	Bentonite	Fuller's earth	Misc. clay including slip clay	Total
Pottery and stoneware:							
Whiteware, etc.	133,098	260,832	--------	--------	--------	--------	393,930
Stoneware, including chemical stoneware........	1,120	510	39,738	--------	--------	--------	41,368
Art pottery and flower pots.	6,615	6,240	45,593	--------	--------	21,296	79,744
Slip for glazing..........	900	--------	--------	--------	--------	1,606	2,506
Total..................	141,733	267,582	85,331	--------	--------	22,902	517,548
Tile high-grade..............	33,729	42,333	120,939	--------	--------	254	197,255
Kiln furniture:							
Saggers, pins, stilts.......	6,508	2,230	19,980	--------	--------	--------	28,718
Wads......................	--------	--------	2,267	--------	--------	--------	2,267
Total..................	6,508	2,230	22,247	--------	--------	--------	30,985
Architectural terra cotta.....	--------	1,295	8,398	--------	--------	--------	9,693
Paper:							
Filler....................	533,490	--------	--------	--------	--------	--------	533,490
Coating...................	431,111	--------	--------	--------	--------	--------	431,111
Total..................	964,601	--------	--------	--------	--------	--------	964,601
Rubber......................	231,331	--------	--------	--------	--------	864	232,195
Linoleum....................	36,163	--------	11,743	--------	--------	--------	47,906
Paints:							
Filler or extender........	21,398	--------	--------	--------	--------	1,380	22,778
Calcimine.................	1,321	--------	--------	--------	--------	--------	1,321
Total..................	22,719	--------	--------	--------	--------	1,380	24,099
Portland and other hydraulic cements..................	77,486	--------	5,488	1,539	--------	7,718,923	7,803,436

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Clay sold or used by producers in the United States in 1951, by kinds and uses, in short tons

Use	Kaolin	Ball clay	Fire clay and stone-ware clay	Bentonite	Fuller's earth	Misc. clay including slip clay	Total
Refractories:							
Firebrick and block..........	178,401	16,979	5,635,296	-------	--------	----------	5,830,676
Bauxite, high-alumina brick..	-------	------	52,020	-------	--------	----------	52,020
Fire-clay mortar, including clay processed for laying firebrick................	9,657	2,002	236,396	-------	--------	----------	248,055
Clay crucibles...............	-------	------	1,152	-------	--------	----------	1,152
Glass refractories...........	905	------	1,299	-------	--------	----------	2,204
Zinc retorts and condensers..	-------	------	36,634	-------	--------	----------	36,634
Foundries and steelworks.....	9,789	880	899,312	282,753	--------	22,655	1,215,389
Other refractories...........	1,484	------	30,613	-------	--------	----------	32,097
Total...............	200,236	19,361	6,392,722	282,753	--------	22,655	7,418,227
Heavy clay products: Common brick, face brick, paving brick, drain tile, sewer pipe, and kindred products...	-------	------	4,615,634	-------	--------	19,126,414	23,742,048
Miscellaneous:							
Rotary drilling mud..........	-------	------	606	460,261	79,469	123,246	663,582
Filtering and decolorizing oils (raw and activated earths).................	-------	------	---------	397,940	195,599/1	----------	593,539
Other filtering & clarifying.	52,633	------	---------	4,793	4,435	----------	61,861
Artificial abrasives.........	5,272	------	56	-------	--------	----------	5,328
Absorbent uses (oily floors, etc.).....................	-------	------	---------	-------	97,465	----------	97,465
Asbestos products............	2,559	------	---------	-------	--------	----------	2,559
Chemicals....................	17,349	------	86,818	539	--------	----------	104,706
Enameling....................	2,300	1,650	---------	-------	--------	----------	3,950
Fertilizers..................	4,874	------	---------	-------	--------	2,477	7,351

(Cont'd.)

(Cont'd.)

Clay sold or used by producers in the United States in 1951, by kinds and uses, in short tons

Use	Kaolin	Ball clay	Fire clay and stoneware clay	Bentonite	Fuller's earth	Misc. clay including slip clay	Total
Filler (other than paper or paint)	2	10,030	-------	-------	11,856	6,039	27,927
Insecticides & fungicides	39,883	------	------	4,043	86,339	256	130,521
Plaster and plaster products	5,507	------	------	-------	------	-------	5,507
Concrete admixtures, sealing dams, etc.	-------	------	------	2,176	------	-------	2,176
Other uses	21,414	------	2,535	64,824	8,460	624,081	721,314
Total	151,793	11,680	90,015	934,576	483,623	756,099	2,427,786
Grand total:							
1951	1,866,299	344,981	11,852,517	1,218,868	483,623	27,649,491	43,415,779
1950	1,750,858	324,414	9,535,876	973,833	396,025	26,400,449	39,381,446

1/ Comprises the following: Mineral oils, 175,348 tons; Vegetable oils, 20,251 tons.

Interior, Duplicating Section, Washington, D. C.

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UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

Secretary
DOUGLAS McKAY,

Director
J. J. FORBES,

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MINERAL MARKET REPORT
MMS NO. 2141
(Replaces November and
December monthly reports, 141 and 142)

MINE PRODUCTION OF ZINC IN THE UNITED STATES IN 1952 - PRELIMINARY ANNUAL FIGURES

Domestic mine production of recoverable zinc (including that recovered as zinc pigments and salts directly from ore) decreased to 661,023 tons in 1952, 3 percent below the 1951 total, according to the Bureau of Mines, United States Department of the Interior. Reduced output was a direct result of the marked drop in zinc price in the second half of the year which reflected decreased demand and increased world-wide availability of zinc. Production during the first half of 1952 was at a rate 6 percent above the 1951 average daily rate and accounted for more than 54 percent of the year's total output. Regionally, on a percentage basis, the greatest decrease was in the Western States where production declined 4 percent from the 1951 total. Output from the States East of the Mississippi River decreased 3 percent in 1952 while production from the West Central States of Oklahoma, Kansas, Missouri, and Arkansas increased 1 percent. The largest State percentage decreases were in Idaho, Nevada, Arizona, Southern Illinois and Kentucky, and Kansas with losses ranging from 9 to 18 percent. Oklahoma, Northern Illinois and Wisconsin, and New Mexico recorded increases of 12, 12, and 13 percent, respectively, in 1952. The average daily production rate for the whole country was 1,806 tons compared with 1,861 tons per day in 1951.

The market price for Prime Western grade slab zinc, East St. Louis, held at the ceiling of 19.50 cents per pound set by the Office of Price Stabilization on October 2, 1951 until June 2, 1952 when increased supplies and lower consumption caused a reduction to 17.50 cents. Subsequent drops brought the price to 13.50 cents in August after which the quotation advanced to 14.50 cents on September 12. The zinc price declined thereafter, reaching a low of 12.50 cents per pound on October 27 at which level it was constant for the remainder of the year.

This report which summarizes mine output for 1952 is part of the regular monthly mine production series. As preliminary figures for November and estimates for December are included, the report serves both these months and the next issue will be for January 1953. The following table and State reviews for 1952 were obtained chiefly from reports of the regional offices of the Bureau of Mines, a procedure followed in the preparation of all reports in this series. The figures are given in terms of recoverable zinc content of ores and concentrates.

Prepared February 11, 1953 by O. M. Bishop, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

States East of the Mississippi River

Mine production of zinc in States East of the Mississippi River decreased 3 percent to 185,114 tons in 1952. This tonnage represented 28 percent of the total United States mine output. New Jersey, one of the largest zinc-producing States, accounted for nearly one-third of the region's output. New York, Tennessee, and Northern Illinois-Wisconsin were the other principal zinc-producing areas in this region. Zinc production from New York was curtailed by approximately 9,000 tons because of a labor strike at the Balmat and Edwards mines of the St. Joseph Lead Co. from July 1 to September 14. Increased production from Northern Illinois-Wisconsin is attributed to production from new operators and relatively continuous operation by the established companies. These factors more than offset the cessation of operations by the Dodgeville Mining Co. in June and the curtailment of operations in October by several small companies when the price of zinc dropped to 12.5 cents a pound.

Several of the leading producers of zinc in Southern Illinois and Kentucky were shut down in June and July by labor strikes, and the declining trend in metal prices caused some rearrangement of operational programs. Moreover, the nationwide steel strike in mid-summer temporarily reduced the demand for flourspar and [illegible] forced curtailment of mining at flourspar properties from which byproduct or coproduct zinc was recovered.

The principal Eastern zinc-producing companies were the New Jersey Zinc Co. (Franklin and Sterling Hill mines in New Jersey and Austinville mine in Virginia); the St. Joseph Lead Co. (Balmat and Edwards mine in New York); the American Zinc Co. of Tennessee (Athletic, Grasselli, Jarnagin, Mascot #2 and North Friends Station mines in Tennessee), the United States Steel Co. Tennessee Coal & Iron Division (Davis-Bible group in Tennessee), the Tennessee Copper Co. in Tennessee; the Vinegar Hill Zinc Co., Tri-State Zinc, Inc., Calumet & Hecla, Inc. (formerly Calumet & Hecla Consolidated Copper Co.), and Eagle-Picher Co. in Northern Illinois and Wisconsin; and the Alcoa Mining Co., Minerva Oil Co., and Ozark Mahoning Co. in Southern Illinois and Kentucky.

Arkansas, Kansas, Missouri, and Oklahoma

Recoverable zinc production from mines in the West Central States increased to 94,412 tons in 1952, a gain of 1 percent over the 1951 output.

Tri-State (Joplin) district. - Zinc production from the Tri-State district accounted for 97 percent of the region total. The strong demand for zinc with accompanying high prices the first six months of the year allowed Tri-State operators to mine the marginal ore bodies at an accelerated rate; 10,700 more tons of zinc was produced in the district in the first half of the year when the price of zinc was maintained at 19.50 cents a pound than in the last half when the price fluctuated downward to 12.50 cents.

The Eagle-Picher Co. continued to be by far the largest zinc producer in the district followed by the American Zinc, Lead and Smelting Co., Nellie B. Division. Other leading zinc-producing companies in the district in 1952 were: Beck Mining Co., Dale Mining Co., Dines Mining Co., Federal Mining & Smelting Co., Harris Mining Co., Helen H. Mining Co., Mission Mining Co., National Lead Co. (St. Louis Smelting & Refining Division), Potter and Sims, and Sooner Milling Co. (treating tailings).

Southeastern Missouri. - A total of 3,077 tons of zinc or 3 percent of the total West Central States' output was produced in Southeastern Missouri in 1952, mostly as a byproduct of lead operations, and approximately the same as that recovered in 1951.

Arkansas. - Zinc mining activity in Arkansas remained on a limited basis in 1952 with a total production of 23 tons compared with 50 tons in 1951.

Western States

The combined Western States produced 381,497 tons of recoverable zinc in 1952, 4 percent less than the 1951 output. This tonnage represented about 58 percent of the total United States mine production of zinc, virtually the same as in 1951. During the latter half of the year many mines were forced to curtail operations or shut down entirely owing to low metal prices.

Arizona. - Output of recoverable zinc in Arizona declined to 46,000 tons, a decrease of about 7,000 tons (13 percent) from that in 1951. The Eagle-Picher Co. San Xavier mine near Sahuarita closed in August and Magma Copper Co. Magma mine at Superior suspended zinc-copper ore mining operations in August because of unfavorable prices and a substantial exhaustion of reserves. Approximately 60 percent of the State's zinc production came from zinc-lead ore, 36 percent from zinc-copper ore, and the remainder chiefly from zinc ore. The chief producers in order of output were the Shattuck Denn Mining Corp. (Iron King mine), Phelps Dodge Corp. (Copper Queen mine), Magma Copper Co. (Magma mine), Coronado Copper & Zinc Co. (Republic-Mammoth group), Phelps Dodge Corp. (United Verde mine), American Smelting & Refining Co. (Flux group), Eagle-Picher Co. (San Xavier mine), St. Anthony Mining & Development Co. (Mammoth-St. Anthony property), and the Athletic Mining Co. (Aravaipa group).

California. - Mine output of zinc in California in 1952 totaled 9,360 tons or 3 percent less than that produced in 1951. The Anaconda Copper Mining Co. Darwin group was by far the largest producer, followed by the Coronado Copper and Zinc Co. Afterthought mine which terminated mining operations in August owing to ore depletion, New Penn Mines, Inc. (formerly Penn Chemical Co.) Penn mine, and Anaconda's Shoshone group which curtailed production in June to explore for new sources of ore. There was some exploration for new deposits in 1952 with major activity in Inyo, San Bernardino, and Shasta counties.

Colorado. - Mine production of zinc in Colorado in 1952 declined 4 percent from the near-record output of 1951 to 53,240 tons. The lower return from ores and concentrates sold, with costs still at high levels, made operations unprofitable for many of the mines, and a number of them, mostly small producers, shut down. The New Jersey Zinc Co. (Empire Zinc Division) Eagle group was by far the largest producer in the State. Other leading producers were the Resurrection Mining Co. (Resurrection group), Idarado Mining Co. (Treasury Tunnel-Black Bear group), Telluride Mines, Inc. (Smuggler Union group), and the Rico Argentine Mining Co. (Rico Argentine group).

Idaho. - Idaho's output of recoverable zinc in 1952 declined 9 percent from that in 1951 to 70,911 tons. The downward trend in zinc prices and a restriction in the use of electric power in November and December were the chief factors contributing to the decrease. The Signal Mining Co. Hilarity mine and the Idaho Custer Mines, Inc. Livingston mine shut down and several major producers of zinc curtailed operations because of low prices. A Defense Electric Power Administration order, effective November 17, 1952 required all Pacific Northwest consumers of power using more than 8,000 kilowatt hours per week to reduce their consumption to 90 percent of what it was in 1951 owing to a lack of rain during the summer and fall. For many operations this meant a curtailment of more than 10 percent of recent consumption because operations were not on the same scale in 1951 as in 1952. Over 90 percent of the zinc produced during the year came from the Coeur d'Alene region. The Star mine of the Sullivan Mining Co. ranked first among Idaho's zinc producers, accounting for nearly 22 percent of the State total zinc. Six other properties, the Bunker Hill mine of the Bunker Hill and Sullivan Mining and Concentrating Co., the Page and Morning mines and Frisco group of the Federal Mining & Smelting Co., the properties of the Day Mines, Inc., and the Sidney group of the Sidney Mining Co. produced the bulk of the remaining State zinc output in 1952.

Montana. - Montana retained its position as the leading zinc-producing State in the United States in 1952 although production declined 4 percent from the high output in 1951. Company-owned and leased operations of the Anaconda Copper Mining Co. at Butte supplied 95 percent of the State's zinc output. The Mike Horse Mining & Milling Co., a subsidiary of American Smelting & Refining Co., announced in November that operations at the Mike Horse mine would be permanently abandoned "due to low metal prices and a substantial exhaustion of reserves".

Nevada. - Mine production of recoverable zinc in Nevada in 1952 was 15,600 tons, a decrease of 11 percent from the 1951 total. Lower production resulted from the closing of the Ely Valley Mines, Inc. Ely Valley mine in August and the Copper Canyon Mining Co. Copper Canyon mine in October because of unprofitable metal prices. The Combined Metals Reduction Co. Combined Metals group was the largest producer in the State followed by the Ely Valley and Copper Canyon properties.

New Mexico. - Zinc production in New Mexico totaled 51,400 tons in 1952, 13 percent above 1951 and the highest since 1943. About 93 percent of the output came from the Central district. The principal producers in the State, all in the Central district, in order of output, were the American Smelting & Refining Co. Ground Hog group, United States Smelting, Refining & Mining Co. Bayard group, Kennecott Copper Corp. Oswaldo mine, New Mexico Consolidated Mines Co. (subsidiary of Peru Mining Co.) Kearney group, New Jersey Zinc Co. (Empire Zinc Division) Hanover group, and the Peru Mining Co. Pewabic group. The Oswaldo mine ceased operations on October 4 and the Hanover mine, closed by a labor strike throughout 1951, resumed operations in January 1952 and shut down again on October 11 because of the drop in the price of zinc. Production at the Kearney and Pewabic groups was curtailed somewhat during the latter half of the year because of the low zinc price. In the Magdalena district lessees continued to operate the Lynchburg mine of the New Jersey Zinc Co. and the Waldo group of the American Smelting & Refining Co.

Utah. - Utah's output of recoverable zinc in 1952 was approximately 34,000 tons, a decrease of 1 percent from 1951. Zinc-lead ore supplied 98 percent of the State total zinc. About 64 percent of the total zinc produced came from the West Mountain (Bingham) district, 22 percent from the Park City region, and 8 percent from the Tintic district. The United States & Lark property of the United States Smelting, Refining & Mining Co. remained by far the largest producer in the State; it was followed by the New Park Mining Co. New Park mine, the Park Utah Consolidated Mining Co. Park Utah property, the Chief Consolidated Mining Co. Chief Consolidated property, the Butterfield Mining Co. (subsidiary of Combined Metals Reduction Co.) Butterfield group, the Ophir property of the United States Smelting, Refining, & Mining Co., and the Calumet Mining Co. (subsidiary of Combined Metals) West Calumet mine. In the Park City region the Park Utah Consolidated Mining Co. property was shut down on June 25 because of a labor strike and the Silver King Coalition Mining Co. closed August 16 because of low metal prices and was idle for the remainder of the year. The Chief Consolidated Mining Co. property in the Tintic district was shut down by a labor strike for nearly three months during the summer.

Washington. - Washington produced 19,149 tons of recoverable zinc in 1952, 5 percent above the previous record output established in 1951. This increase was achieved despite declining metal market prices and a power shortage in November and December which resulted largely in the suspension of mine development work, although some mines were forced to decrease production. Leading zinc producers, in order of output, were the Pend Oreille mine of the Pend Oreille Mines & Metals Co., the Grandview mine of the American Zinc, Lead & Smelting Co., the Deep Creek mine of the Goldfield Consolidated Mining Co., and the Holden mine of the Howe Sound Co. These four mines accounted for 98 percent of the total State zinc output.

Mine production of recoverable zinc in the United States in 1951 and in 1952 by months 1/, in short tons

egion and State	Total 1951	January	February	March	April	May	June	July	August	September	October	November	December	Total 1952
ates East of the ississippi River:														
Southern Illinois & Kentucky	9,584	665	709	678	748	778	180	674	724	736	676	740	722	8,030
Northern Illinois & Wisconsin	31,403	2,734	2,789	2,936	3,271	3,151	3,008	2,698	2,914	2,977	3,240	2,709	2,886	35,313
New Jersey, New York & Virginia ..	110,300	10,855	9,835	10,422	9,948	9,855	9,430	5,688	5,526	6,842	9,056	8,153	8,311	103,921
Tennessee	38,639	3,108	3,139	3,356	3,506	3,720	3,497	3,039	2,884	2,868	3,145	2,716	2,872	37,850
	189,926	17,362	16,472	17,392	17,473	17,504	16,115	12,099	12,048	13,423	16,117	14,318	14,791	185,114
est Central States:														
Arkansas	50	4	2	2	4	4	4	3	–	–	–	–	–	23
Kansas	28,904	2,845	2,389	2,372	2,450	2,474	2,208	1,953	1,506	1,306	1,570	1,374	1,248	23,695
Missouri	11,476	946	1,039	717	795	1,330	747	866	608	790	1,182	1,007	828	10,855
Oklahoma	53,450	5,204	5,089	5,316	5,414	5,888	5,144	4,810	4,786	4,766	4,675	4,524	4,223	59,839
	93,880	8,999	8,519	8,407	8,663	9,696	8,103	7,632	6,900	6,862	7,427	6,905	6,299	94,412
Western States:														
Arizona	52,949	3,935	4,335	4,465	4,720	4,650	4,155	3,800	3,565	2,925	3,130	3,200	3,120	46,000
California	9,602	920	860	980	980	1,040	780	770	830	490	610	560	540	9,360
Colorado	55,714	4,630	4,494	4,507	4,174	4,517	4,657	4,609	4,566	4,245	4,629	4,144	4,068	53,240
Idaho	78,121	6,533	6,574	6,262	6,086	6,394	5,349	5,638	5,670	5,542	5,863	5,500	5,500	70,911
Montana	1/ 85,551	6,609	6,546	7,712	7,325	7,297	6,824	6,675	6,263	5,902	6,828	6,217	7,636	81,834
Nevada	17,443	1,140	1,240	1,640	1,670	1,680	1,720	1,220	1,190	1,190	920	1,050	940	15,600
New Mexico	45,419	4,536	4,680	4,565	5,079	4,885	4,672	4,817	4,340	4,255	3,551	3,015	3,005	51,400
Oregon	3	–	–	–	–	–	–	–	–	–	–	–	–	–
Texas	24	2	1	–	–	–	–	–	–	–	–	–	–	3
Utah	34,317	2,950	3,550	3,350	3,300	3,470	3,310	1,900	2,370	2,300	2,500	2,500	2,500	34,000
Washington	18,189	1,707	1,677	1,624	1,741	1,530	1,383	1,482	1,740	1,614	1,771	1,490	1,390	19,149
	1/ 397,332	32,962	33,957	35,105	35,075	35,463	32,850	30,911	30,534	28,463	29,802	27,676	28,699	381,497
Alaska 2/	1	–	–	–	–	–	–	–	–	–	–	–	–	–
Total United States	1/ 681,139	59,323	58,948	60,904	61,211	62,663	57,068	50,642	49,482	48,748	53,346	48,899	49,789	661,023
Daily average 3/ .	1,866	1,913	2,032	1,964	2,040	2,021	1,902	1,633	1,596	1,624	1,720	1,630	1,606	1,806

1/ Revised figures. 2/ Alaska monthly totals based on smelter receipts. 3/ Based on number of days in the month without adjustment for Sundays and holidays.

Interior-Duplicating Section, Washington, D. C.

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UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

Secretary — DOUGLAS McKAY,
Director — J. J. FORBES,

For immediate release

MINERAL MARKET REPORT
MMS NO. 2142
(Replaces November and
December monthly reports, 138 and 139)

MINE PRODUCTION OF LEAD IN THE UNITED STATES IN 1952 - PRELIMINARY ANNUAL FIGURES

Domestic mine production of recoverable lead decreased 1 percent to 384,097 tons in 1952 and was the lowest annual output since 1946, according to the Bureau of Mines, United States Department of the Interior. Decreased output resulted largely from lower market prices for lead beginning April 29 which were brought about by increased world-wide availability of lead and reduced consumption in the United States. Production during the first half of the year was at a rate 4 percent above the 1951 average daily rate compared with production at a rate 7 percent below the 1951 average in the last half of the year. Missouri was by far the largest lead-producing State, accounting for 32 percent of the total United States output. Idaho and Utah were the second and third leading States, producing 19 percent and 13 percent, respectively, of the nation's total.

Production in 7 of the 15 principal States or regions was higher than that in 1951. The largest increases, on a tonnage basis, were in Washington; New York, Tennessee, and Virginia; Northern Illinois and Wisconsin; and New Mexico. States in which lead production decreased substantially included Idaho, California, Kansas, and Arizona. The average daily production rate in 1952 was 1,049 tons compared with 1,063 tons per day in 1951.

The market price for common lead, New York, held at the ceiling of 19.00 cents per pound was set by the Office of Price Stabilization on October 2, 1951 until April 29, 1952 when increased supplies and lower consumption caused a decline to 18.00 cents. Subsequent drops brought the price to 15.00 cents a pound on May 12. The quoted price advanced to 16.00 cents on June 24 where it remained until October 7 when it again dropped to 15.00 cents. Limited buying caused further declines in the following weeks and on October 22 the price was down to 13.50 cents, the low point of the year. In November and December the market improved and on December 30 the quotation for lead was 14.75 cents a pound.

This report which summarizes mine output for 1952 is part of the regular monthly lead mine production series. As preliminary figures for November and estimates for December are included, the report serves both these months and the next issue will be for January 1953. The following table and State reviews for 1952 were obtained from reports of the regional offices of the Bureau of Mines. The figures are given in terms of recoverable lead content of ores and concentrates.

Prepared February 13, 1953 by O. M. Bishop, under the supervision of Charles H. Johnson, Chief, Base Metals Branch, Minerals Division.

States East of the Mississippi River

Mine production of lead in the Eastern States totaled 11,480 tons in 1952, a gain of 49 percent over the quantity produced in 1951 and the highest output on record. This peak production was achieved largely as a result of relatively continuous operations at the leading properties. Mine output in New York, Tennessee, and Virginia increased 65 percent to 4,980 tons in 1952. Lead is produced chiefly as a byproduct or coproduct with zinc in these States; the principal producers are the New Jersey Zinc Co. (Austinville mine, Virginia) and the St. Joseph Lead Co. (Balmat mine, New York).

In Northern Illinois and Wisconsin output rose to 3,723 tons or 83 percent above that produced in 1951. The leading producers were Tri-State Zinc, Inc., Vinegar Hill Zinc Co., Calumet and Hecla, Inc. (formerly Calumet and Hecla Consolidated Copper Co.), and the Eagle-Picher Co. The Dodgeville Mining Co. ceased operations in June for lack of ore.

Lead output from Southern Illinois and Kentucky increased 6 percent to 2,777 tons in 1952. Most of the production came from the Ozark Mahoning Co. mines where lead is recovered mainly as a byproduct or coproduct with fluorspar.

Arkansas, Kansas, Missouri, and Oklahoma

The West Central States produced 146,889 tons of recoverable lead in 1952, 2 percent less than the quantity mined in 1951. Missouri, the greatest lead-producing State in the United States, produced 123,955 tons.

Southeastern Missouri. - Southeast Missouri, the Nation's major lead-producing district for the 45th consecutive year, accounted for 83 percent of the production from the West Central States. Production for the first six months from Southeast Missouri was but 2 percent more than output in the last six months, indicating that the price declines which began in April had less effect on production than these price changes had elsewhere in the lead mining industry. There was some curtailment of development work, however. The St. Joseph Lead Co. continued as the largest individual lead producer in the district and in the United States. The company operated its four mills, having a combined daily capacity of 26,800 tons and its Bonne Terre, Desloge, Federal (including Doe Run), and Leadwood groups of mines in the Lead Belt, throughout the year. The company also began production from its Hayden Creek property in September and continued development of its Indian Creek property. In addition the St. Joseph Lead Co. operated Mine LaMotte and its 2,000-ton mill as a joint venture with the National Lead Co. National Lead (St. Louis Smelting & Refining Division) operated its Madison lead-copper mine and 1,200-ton mill throughout the year.

Tri-State (Joplin) district. - The Tri-State district (Oklahoma, Kansas, and southwestern Missouri) produced 24,744 tons of recoverable lead in 1952 compared with 26,906 tons in 1951. Production sustained a drop of 20 percent in the latter half of the year when compared with the first six months; many small mines were curtailed or closed because of the sharp decline in the zinc price as zinc constitutes the major values in most of the district. The decline in Kansas accounted for most of the district decrease while Southwest Missouri showed a notable increase. The Quick Seven pit (Brown & Root and American Zinc, Lead & Smelting Co.) and the Kelsey Norman pit of the Badgett Mine Stripping Corp. joined the Potters Sims Mines, Inc. in September to make open-pit production in Southwest Missouri the major source of lead and zinc from that area. The Eagle-Picher Co. remained by far the largest lead producer in the Tri-State district followed by the American Zinc, Lead & Smelting Co. Other significant producers were the National Lead Co. (closed on account of a labor strike during the last four months of the year), Beck Mining Co., Potter and Sims, Federal Mining & Smelting Co., and the Dines Mining Co.

Western States

Mine production of recoverable lead in the combined Western States totaled 225,727 tons in 1952, a decrease of 2 percent from the tonnage produced in 1951. These States accounted for 59 percent of the total domestic production compared with 60 percent in 1951.

Arizona. - Lead output in Arizona in 1952 decreased 7 percent to 16,150 tons, the lowest since 1943. Reduced output resulted largely from the closing of the Eagle-Picher Co. San Xavier mine in August because of low metal prices. The chief producers in the State in 1952, in order of output, were the Shattuck Denn Mining Corp. (Iron King mine), St. Anthony Mining & Development Co. (Mammoth-St. Anthony property), American Smelting & Refining Co. (Flux group), Eagle-Picher Co. (San Xavier mine), Phelps Dodge Corp. (Copper Queen mine) and the Athletic Mining Co. (Aravaipa group).

California. - California's lead output decreased to 10,990 tons in 1952, 21 percent below that of 1951. The Anaconda Copper Mining Co. Darwin and Shoshone groups accounted for the bulk of the State production. The Shoshone property curtailed production in June to explore for new sources of ore. Coronado Copper & Zinc Co., the only other large producer of lead in the State, terminated mining operations at its Afterthought mine in August owing to ore depletion. There was some exploration for new deposits in 1952 with activity centered mainly in Inyo, San Bernardino and Shasta counties.

Colorado. - Mine production of lead in Colorado in 1952 totaled about 30,000 tons or 1 percent less than that produced in 1951. Low metal prices in the latter part of the year made operations unprofitable for many mines, and a number of them, mostly small producers, shut down. The leading producers, in order of output, were the Resurrection Mining Co. (Resurrection group), Idarado Mining Co. (Treasury Tunnel-Black Bear group), New Jersey Zinc Co., Empire Zinc Division (Eagle group), Telluride Mines, Inc. (Smuggler Union group), and the Rico Argentine Mining Co. (Rico Argentine group). Other moderate-sized producers were the American Smelting & Refining Co. (Garabaldi lease), Callahan Zinc-Lead Co., Emperius Mining Co., King Lease, Inc., Pride of the West, Inc. and Shenandoah-Dives Mining Co.

Idaho. - Lead output in Idaho in 1952 was 72,291 tons, a decrease of 6 percent from the 1951 total. Declining market prices for lead and zinc and a restriction on the use of electric power were the principal factors contributing to the reduced output. The Signal Mining Co. Hilarity mine and the Idaho Custer Mines, Inc. Livingston mine shut down and Day Mines, Inc., Spokane-Idaho Mining Co., and Sunset Minerals, Inc. curtailed operations because of low metal prices. Pacific Northwest consumers of power using more than 8,000 kilowatt hours per week were required to reduce their consumption to 90 percent of what it was in 1951, owing to the lack of rain during the summer and fall. About 90 percent of the State total lead output in 1952 came from the Coeur d'Alene region. The remainder was produced chiefly in the Warm Springs, Bayhorse, and Texas districts. The Bunker Hill & Sullivan mine of the Bunker Hill & Sullivan Mining & Concentrating Co. accounted for more than one-third of the State output. Other large producers were the Day Mines, Inc., the Page and Morning mines and Frisco group of the Federal Mining & Smelting Co., the Star mine of the Sullivan Mining Co., the Triumph Mining Co., the Sunshine Mining Co., Golconda Lead Mines, the Sidney group of the Sidney Mining Co., and the Constitution mine of the Spokane-Idaho Mining Co.

Montana. - Montana lead production dropped 1 percent to 21,131 tons in 1952. The bulk of the output came from the Anaconda Copper Mining Co. owned and leased operations at Butte. Smaller quantities of lead were obtained from the American Smelting & Refining Co. subsidiary-owned Mike Horse mine (which was permanently abandoned in November "due to low prices and a substantial exhaustion of reserves"), and from the Jack Waite and Iron Mountain mines.

Nevada. - Recoverable lead output in Nevada in 1952 decreased to 6,850 tons, 4 percent below the 1951 tonnage, owing chiefly to the closing of the Copper Canyon Mining Co. Copper Canyon mine in October and the Ely Valley Mines, Inc. mine in August because of low metal prices. The Combined Metals Reduction Co. Combined Metals group was by far the largest producer in the State, followed by the Copper Canyon and Ely Valley properties.

New Mexico. - Mine production of lead in New Mexico in 1952 increased to 6,880 tons or 18 percent higher than in 1951. Most of the output came from mines in the Central and Magdalena districts and minor tonnages of lead and barite ores were mined in the Hansonberg district. The leading producers, in order of output, were the American Smelting & Refining Co. (Ground Hog group), the United States Smelting, Refining & Mining Co. (Bayard group) and the lessee-operated Lynchburg mine of the New Jersey Zinc Co.

Texas. - Texas produced 56 tons of recoverable lead in 1952 compared with 43 tons in 1951. Output was chiefly from lead-zinc and lead-copper ores from exploratory projects in the Sierra Blanca district.

Utah. - Output of recoverable lead in Utah in 1952 declined 1 percent from the 1951 total to approximately 50,000 tons. Zinc-lead ore supplied 92 percent of the State total lead. About 69 percent of the output came from the West Mountain (Bingham) district, 15 percent from the Park City region, and 8 percent from the Tintic district. The United States & Lark property of the United States Smelting, Refining & Mining Co. remained by far the largest producer in the State, and was followed by the Chief Consolidated Mining Co. (Chief Consolidated mine), New Park Mining Co. (New Park property), Combined Metals Reduction Co. (Calumet Mining Co. mine), Park Utah Consolidated Mining Co. (Park Utah property), Silver King Coalition Mining Co. (Silver King Coalition mine), and Combined Metals Reduction Co. (Butterfield Mining Co. group). In the Park City region the Park Utah Consolidated Mining Co. property was shut down on June 25 because of a labor strike and the Silver King Coalition Mining Co. property closed August 16 because of low metal prices. The Chief Consolidated Mining Co. property in the Tintic district was shut down by a labor strike for nearly three months during the summer.

Washington. - Production of lead in Washington in 1952 totaled 11,376 tons, 42 percent above the 1951 output and an all-time high. The leading producers, in order of output, were the Pend Oreille Mines & Metals Co. (Pend Oreille mine), the American Zinc, Lead & Smelting Co. (Grandview mine), the Anaconda Copper Mining Co. (Bonanza mine), and the Goldfield Consolidated Mining Co. (Deep Creek mine). These four properties accounted for 99 percent of the total State lead during the year.

Mine production of recoverable lead in the United States in 1951 and 1952, by months 1/, in short tons

Region and State	Total 1951	January	February	March	April	May	June	July	August	September	October	November	December	Total 1952
States East of the Mississippi River:														
Southern Illinois & Kentucky	2,629	276	253	294	263	228	148	237	236	189	214	220	219	2,777
Northern Illinois & Wisconsin	2,029	279	289	220	303	282	307	281	272	393	405	370	322	3,723
New York, Tennessee & Virginia ..	3,022	483	375	446	540	550	519	374	283	304	428	309	369	4,980
	7,680	1,038	917	960	1,106	1,060	974	892	791	886	1,047	899	910	11,480
West Central States:														
Arkansas	33	-	-	-	4	-	-	-	-	-	-	-	-	4
Kansas	8,947	723	537	536	490	544	565	525	405	328	355	352	339	5,699
Missouri	123,702	11,542	10,600	10,169	10,794	10,081	9,977	10,458	9,501	10,137	11,823	9,087	9,706	123,955
Oklahoma	16,575	1,689	1,610	1,591	1,709	1,578	1,440	1,380	1,331	1,316	1,302	1,146	1,139	17,231
	149,257	13,954	12,747	12,296	12,997	12,203	11,982	12,363	11,237	11,781	13,480	10,585	11,264	146,889
Western States:														
Arizona	17,394	1,275	1,455	1,435	1,425	1,500	1,350	1,200	1,370	1,250	1,280	1,350	1,260	16,150
California	13,967	1,090	1,220	1,170	1,220	1,270	770	770	740	560	800	680	700	10,990
Colorado	30,336	2,330	2,313	2,226	2,372	2,619	2,567	2,729	2,786	2,620	2,798	2,313	2,327	30,000
Idaho	76,713	6,927	6,847	6,315	6,282	5,979	4,500	5,570	5,607	6,027	6,237	6,000	6,000	72,291
Montana	21,302	1,761	1,655	2,018	2,023	2,008	1,858	1,718	1,661	1,694	1,713	1,539	1,483	21,131
Nevada	7,148	450	530	570	680	540	570	430	560	580	670	570	600	6,850
New Mexico	5,846	550	566	616	559	606	573	529	612	567	644	590	468	6,880
Oregon	2	-	-	-	-	1	-	-	-	-	-	-	-	1
South Dakota	2	-	-	1	-	-	-	1	-	-	-	-	-	2
Texas	43	1	2	2	8	10	8	11	3	2	5	4	-	56
Utah	50,451	3,880	4,950	4,495	4,700	5,260	5,000	3,000	3,870	3,640	3,725	3,730	3,750	50,000
Washington	8,002	1,042	1,137	1,328	1,124	768	850	649	995	779	1,124	900	780	11,376
	231,206	19,306	20,675	20,176	20,393	20,561	18,046	16,607	18,204	17,719	18,996	17,676	17,368	225,727
laska 2/	21	1	-	-	-	-	-	-	-	-	-	-	-	1
otal United States	388,164	34,299	34,339	33,432	34,496	33,324	31,002	29,862	30,232	30,386	33,523	29,160	29,542	384,097
aily average 3/ ...	1,063	1,106	1,184	1,078	1,150	1,091	1,033	963	975	1,013	1,081	972	953	1,049

/ Revised figures. 2/ Alaska monthly totals based on smelter receipts. 3/ Based on number of days in the month without adjustment for Sundays and holidays.

terior-Duplicating Section, Washington, D. C.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

DOUGLAS MCKAY, Secretary
J. J. FORBES, Director

FOR IMMEDIATE RELEASE

MINERAL MARKET REPORT
MMS NO. 2143

ABRASIVE MATERIALS IN 1951

The abrasive industry continued its upward trend during 1951, and record productions were made in quartz, ground sand and sandstone, pumice and pumicite, garnet, emery, silicon carbide, and metallic abrasives. Certain of the abrasive products for which production figures are given also have important non-abrasive uses.

Salient statistics of the abrasives industries in the United States, 1950-51

	1950		1951		Percent of change in 1951	
	Short tons	Value	Short tons	Value	Short tons	Value
Natural abrasives (domestic) sold or used by producers:						
Diatomite	(1/)	(1/)	(1/)	(1/)	---	---
Tripoli	43,720	$1,173,647	37,476	$1,105,135	-14	- 6
Quartz	160,508	706,724	281,047	1,165,370	+75	+65
Ground sand and sandstone	750,673	6,462,503	818,479	7,163,343	+ 9	+11
Grindstones	4,435	230,462	5,549	313,901	+25	+36
Pulpstones	33	2,100	22	1,970	-33	- 6
Millstones	(2/)	11,300	(2/)	6,000	---	-47
Tube-mill liners	1,523	62,535	1,408	77,027	- 8	+23
Grinding pebbles	1,923	53,007	3,062	84,306	+59	+59
Pumice and pumicite	719,356	2,661,052	749,942	2,752,907	+ 4	+ 3
Garnet	9,304	793,558	14,050	1,246,947	-51	-57
Emery	5,949	75,308	11,634	160,212	+96	+113
Artificial abrasives:						
Silicon carbide-production 3/	65,004	7,303,671	100,498	11,734,812	+55	+61
Aluminum oxide-production 3/	140,352	11,958,035	216,329	21,444,343	+54	+79
Metallic abrasives (steel shot and grit)-shipments	144,333	11,699,764	189,831	20,741,112	-32	+77
Foreign trade (natural and artificial abrasives):						
Imports	-------	4/48,801,998	-------	65,487,548	---	+34
Exports	-------	4/16,175,052	-------	25,157,033	---	+56

See footnotes on following page.

Prepared by Henry P. Chandler and A. L. Marks, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

1/ Average annual figure for 1949-51 was 274,070 short tons valued at $7,577,119; Bureau of Mines not at liberty to publish annual data separately.
2/ Tonnage not recorded.
3/ Includes Canadian production.
4/ Revised figure.

Diatomite. - The use of diatomite continued to show an increase during 1951. The average production for the three year period 1949-1951, was 274,070 short tons, valued at $7,577,119. Current production figures may not be published. Producing States were California, Nevada and Oregon.

Tripoli. - Sales of tripoli, amorphous silica, and rottenstone during 1951 showed a decline both in tonnage and value over the previous year. The producing States were Illinois, Missouri and Pennsylvania.

Tripoli 1/ sold or used by producers in the United States, 1947-1951, by uses 2/

Year	Abrasives		Filler		Other, including foundry facings		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1947..	29,866	$654,232	2,573	$47,640	2,139	$49,550	34,578	$751,422
1948..	22,193	606,402	2,723	45,000	1,929	54,121	26,845	705,523
1949..	20,972	587,241	2,820	53,938	1,733	49,385	25,525	690,564
1950..	34,865	968,497	6,744	147,379	2,111	57,771	43,720	1,173,647
1951..	28,000	869,000	7,000	155,000	2,476	81,135	37,476	1,105,135

1/ Including amorphous silica and Pennsylvania rottenstone.
2/ Partly estimated.

Quartz. - Total sales of crude, crushed and ground quartz from pegmatite veins or dikes and from quartzite in 1951 amounted to 281,047 short tons, valued at $1,165,370, an increase of 75 percent in tonnage and 65 percent in value over the preceeding year. The sales of crude quartz showed a decline, but those of crushed quartz increased over 100 percent, and ground quartz showed a substantial increase. Sales of quartzite to cement mills and certain sales of quartz or quartzite for use in the manufacture of ferrosilicon are not included in the accompanying statistics.

Quartz (crude, crushed, and ground) sold or used by producers in the United States, 1947-51

Year	Crude		Crushed		Ground 1/		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1947..	21,940	$118,231	62,169	$170,254	17,208	$136,040	101,317	$424,525
1948..	41,081	250,184	104,496	374,781	16,284	125,702	161,861	750,667
1949..	15,816	74,562	72,432	257,213	19,304	143,716	107,552	475,491
1950..	11,062	52,591	117,499	430,256	31,947	223,877	160,508	706,724
1951..	8,236	23,098	237,806	890,918	35,005	251,354	281,047	1,165,3[illegible]

1/ To avoid duplication, the ground material shown here is only that ground by the original producers of the crude quartz or by grinders who purchase from small miners not reporting their production.

Ground sand and sandstone. - In 1951 the sales of ground sand and sandstone were 818,479 short tons, valued at $7,163,343. Illinois was the largest producer. Uses of ground sand and sandstone in 1951 as reported by companies representing 85 percent of the total sales were as follows: Pottery, porcelain and tile industries (41 percent), abrasive uses, chiefly cleansing and scouring compounds (23 percent), foundries (14 percent), fillers (12 percent), enamel (4 percent), and others (6 percent).

Ground sand and sandstone sold or used by producers in the United States, 1946-51

Year	Short tons	Value	Year	Short tons	Value
1946.........	575,888	$4,125,398	1949.........	610,789	$5,258,464
1947.........	644,508	5,154,264	1950.........	750,673	6,462,503
1948.........	692,773	5,778,277	1951.........	818,479	7,163,343

Abrasive sands. - Considerable tonnages of natural sands with a high silica content are sold for abrasive purposes, such as glass grinding, stone polishing and sand blasting. Sales of such sands in 1951 were about 1,400,000 short tons, valued at approximately 3 million dollars. This includes some 500,000 short tons of blast sand valued at $1,500,000.

Pumice and pumicite. - Pumice and pumicite (volcanic ash) sold or used in 1951 totaled 749,942 short tons valued at $2,752,907, which was a 4 percent increase in tonnage and 3 percent in value over 1950. About 96 percent of the domestic production was used as a concrete admixture or concrete aggregate. Only a little over one percent was used as an abrasive. Production was reported from 15 States; the largest producing State was California, with New Mexico second.

Pumice and pumicite sold or used by producers in the United States, 1949-51, by uses

Use	1949		1950		1951	
	Short tons	Value	Short tons	Value	Short tons	Value
Abrasive:						
Cleansing and scouring compounds and hand soaps............	15,926	$188,823	15,362	$198,053	8,205	$124,314
Other abrasive uses.	8,077	320,017	12,214	410,243	4,485	318,013
Acoustic plaster......	10,018	182,990	6,662	151,766	3,761	112,518
Concrete admixture and concrete aggregate..	672,592	1,559,587	672,125	1,750,269	720,170	1,988,204
Other uses 1/.........	10,129	117,665	12,993	150,721	13,321	209,858
Total..........	716,742	2,369,082	719,356	2,661,052	749,942	2,752,907

1/ Insecticide, insulation, brick manufacture, filtration, solvents, roads (surfacing and ice control), absorbents, soil conditioner, and miscellaneous uses.

Garnet. - Garnet production in 1951 was 14,050 short tons, valued at $1,246,947, an increase of 51 percent in tonnage and 57 percent in value over 1950. Sales of the fine sizes of garnet to the optical and other industries increased during the year.

Abrasive garnet sold or used by producers in the United States, 1946-51

Year	Short tons	Value	Year	Short tons	Value
1946..........	7,743	$570,186	1949..........	6,578	$505,231
1947..........	8,722	614,071	1950..........	9,304	793,558
1948..........	8,039	587,797	1951..........	14,050	1,246,947

Corundum. - South Africa continues to be the source of nearly all the corundum used in the United States, 4,893 short tons, valued at $273,095, being imported in 1951, compared with 3,543 short tons, valued at $194,427 during the previous year. No domestic or Canadian production was reported.

Emery. - Domestic production of emery during 1951 was 11,634 short tons, valued at $160,212, an increase of 96 percent in tonnage and 113 percent in value over 1950. A large part of the domestic output was used as a non-skid agent in concrete floors and steps. Imports of emery ore into the United States during 1951 totaled 2,810 short tons, valued at $33,519.

Industrial diamonds. - World production of industrial diamonds in 1951 was approximately 14 million carats, an increase of 10 percent over 1950. Of this amount, some 10,036,000 carats were mined in the Belgian Congo. Total imports of industrial diamonds of all kinds into the United States during 1951 were 12,225,380 carats, valued at $46,739,991, an increase of 9 percent by weight and 26 percent in value over the 1950 figure. There was no domestic production recorded. The United States Government continued to purchase industrial diamonds for the National stockpile.

The largest consumers of industrial diamonds in this country are the manufacturers of diamond grinding wheels. Expanding use of cemented-carbide cutting tools increased the demand for these grinding wheels, and their successful application for glass grinding and concrete cutting have further extended their use in industry.

Industrial diamonds (glaziers', engravers', and miners') imported
for consumption in the United States, 1946-51
(U. S. Department of Commerce)

Year	Carats	Value		Year	Carats	Value	
		Total	Average			Total	Average
1946--	4,652,639	$14,406,137	$3.10	1949--	6,279,096	$17,392,288	$2.77
1947--	3,999,119	13,312,668	3.33	1950--	1/11,039,036	1/36,792,832	1/3.33
1948--	10,421,207	32,581,385	3.13	1951--	12,051,961	45,855,790	3.80

1/ Revised figure.

Artificial abrasives. - Combined tonnages of aluminum oxide and silicon carbide manufactured in the United States and Canada during 1951 increased 54 percent, and its value 72 percent over the previous years production. The figure for aluminum oxide includes 27,262 short tons of "white high-purity" material valued at $3,749,670, compared with 20,188 short tons, valued at $2,607,590 in 1950. Manufacture of refractories consumed 4 percent of the aluminum oxide and 46 percent of the silicon carbide in 1951.

Crude artificial abrasives produced in the United States and Canada
1947-51

Year	Silicon carbide1/		Aluminum oxide1/ (abrasive grade)		Metallic abrasives2/		Total	
	Short tons	Value	Short tons	Value	Short tons	Value	Short tons	Value
1947-	63,724	$5,633,811	160,022	$10,158,432	154,191	$12,449,855	377,937	$28,242,098
1948-	63,033	5,874,731	154,972	10,279,583	147,218	15,174,773	365,223	31,329,087
1949-	67,539	6,055,763	125,806	8,500,074	104,778	9,312,368	298,123	23,868,205
1950-	65,004	7,303,671	140,352	11,958,035	144,333	11,699,764	349,689	30,961,470
1951-	100,498	11,734,812	216,329	21,444,343	189,831	20,741,112	506,658	53,920,267

1/ Bureau of Mines not at liberty to publish data for United States separately. Figures include a small quantity used for refractories and other nonabrasive purposes.

2/ Shipments from United States plants only.

The output of metallic abrasives in the United States during 1951 showed an increase of 32 percent in tonnage and 77 percent in value over 1950.

Stocks of aluminum oxide increased 47 percent, silicon carbide 34 percent, and metallic abrasives 35 percent over the 1950 figures. The following increases in plant capacity over 1950 were noted for 1951: silicon carbide 26 percent, aluminum oxide 4 percent, metallic abrasives 16 percent.

Miscellaneous mineral abrasive materials. - In addition to the natural and manufactured abrasive substances for which data are included therein, many other mineral materials are used for abrasive purposes, including various oxides and carbides, finely ground and calcined clays, lime, talc, ground feldspar, river silt, slate flour and whiting.

Foreign trade. - The total value of imports for consumption of both natural and artificial abrasives during 1951 was $65,487,548, an increase of 34 percent over 1950. The largest item was industrial diamonds of all kinds, valued at $46,739,991. Crude aluminum oxide and silicon carbide, with a combined value of $16,483,624, nearly all imported from Canada, was the second largest item.

The value of natural and artificial abrasives exported during 1951 was $25,157,033, an increase of 56 percent over 1950.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

UNIVERSITY OF ILLINOIS

DOUGLAS McKAY, Secretary J. J. FORBES, Director

For immediate release

MINERAL MARKET REPORTS
MMS. NO. 2147

IRON ORE IN 1952 - PRELIMINARY

United States production and shipments of iron ore were suspended for nearly 2 months during the summer of 1952, decreasing output approximately 16 percent below 1951, according to the Bureau of Mines, United States Department of the Interior. The major steel strike of June and July included mine operations and reduced production to an estimated 97.6 million gross tons as compared with 116.5 million tons in 1951. Following the strike and aided substantially by new shipping capacity on the Great Lakes, mines and transportation facilities succeeded in supplying sufficient ore to support furnace operations through the winter season. Efforts were intensive through November and successful to the extent that some expected all-rail shipments during winter months became unnecessary. December shipments over the Lakes were 45 percent less than December 1951 while November shipments were 63 percent higher than the corresponding month of 1951. The limits imposed upon iron ore supply by Great Lakes shipping capacity appear to have been eliminated. However, full production of steel throughout 1953 will intensify demand for domestic iron ore and probably result in a total output that will establish a new record high.

The producing districts recorded slight changes in the percentage distribution of production. Lake Superior district accounted for 79.2 percent of total production as compared with 80.6 in 1951; Southeastern States supplied 7.7 percent as compared with 7.4 percent in 1951; Northeastern States, 4.5 percent compared with 4.4 in 1951; and Western States advanced their relative position to 8 percent as compared with 7 percent in 1951. Byproduct ore shipments increased slightly to 0.6 percent of total output, but the change was not significant in the total supply.

Of the 18 states reporting iron ore production in 1952, Minnesota accounted for 66 percent of the total, Michigan 12 percent, and Alabama 7 percent, Tennessee reported small shipments of iron ore in addition to byproduct ore obtained from treating pyrites which also was supplied from Colorado, Delaware, and Virginia. Manganiferous iron ore used for blending with iron ore was produced in Arkansas, Minnesota, Michigan, Montana, and New Mexico and totaled an estimated 850,000 tons in addition to the iron ore. In all, 22 states contributed to domestic supply in 1952.

Estimates of value applied to iron ore before shipment totaled $590 million for 1952. The firmness of this estimate suffers somewhat owing to the decontrol of prices for ore shipped from integrated operations and price increases granted by PS late in the season for merchant ore. The average value per ton increased to approximately $6.00 from $5.46 in 1951, and $4.99 in 1950.

Prepared by Jachin M. Forbes under the supervision of Norwood B. Melcher, Chief, Ferrous Metals and Alloys Branch, Minerals Division.

Lake Superior District.- Production and shipments of iron ore from Minnesota, Michigan and Wisconsin were nearly 20 million gross tons short of the goal set at the beginning of the season. However, operations were highlighted by the successful effort following the strike to supply adequate ore for winter consumption by dependent furnaces. Mining was suspended from June 2 to July 28, but shipments continued until ore loaded on cars at the beginning of the strike was delivered at lower Lake ports. As a result, deliveries at the end of the strike were slow regaining a high level owing to the necessity of refilling supply lines.

Estimated total production for the District during 1952, including approximately 800,000 tons of manganiferous iron ore was 78,100,000 tons. Lake shipments from United States ports totaled 72,946,000 tons, and all-rail shipments were estimated at 5,100,000 tons, including about 1.5 million tons to plants normally supplied by all-rail shipments. Shipments from Canadian ports totaled 1,965,000 tons according to the Lake Superior Iron Ore Association.

The 1952 Lake navigation season was of near average duration, opening and closing a few days earlier than usual. Escanaba on Lake Michigan loaded the first cargo of iron ore on the Albert E. Heekin, which departed April 2. Upper Lake ports shipped ore on April 5, and the movement gained volume without undue hindrance thereafter; April shipments exceeded 6 million tons. Eleven ships joined the ore-carrier fleet during the period November 1, 1951-November 1, 1952, adding 1,816,000 tons of capacity per trip and bringing seasonal capacity above the 100-million-ton level. More new capacity will be added in 1953, virtually assuring that ore-carrier capacity will no longer be a limiting factor in the supply of Lake Superior ore. Shipments of ore by water and all-rail routes were heavy following the strike settlement and continued through November to avoid a possible shortage in the event of an early close to Lake navigation. The result was successful enough to permit a rapid seasonal wane at the end of November before weather forced a halt in water movement. The final shipment was out of Marquette, Michigan on December 7 as compared with a final departure on December 10 in 1951. Season-end voyages are increasingly hazardous as winter conditions set in, and navigation closes according to judgement of a number of factors balanced against the need for ore.

Southeastern States.- Alabama, Georgia, Tennessee, and Virginia produced an estimated 7,500,000 tons of iron ore in 1952, a decrease of 13 percent below 1951, which also was attributable to the steel strike. Furnaces in the Birmingham area are consuming increasing quantities of imported ore, and the output of local red ore is hampered by the long underground haul from the working face to surface openings. Until red ore beneficiation is generally accepted as economically feasible, iron ore production in Alabama is not likely to exceed the record high output of 1942. Intermittent and small producers of brown ore concentrates from numerous surface operations continue to supply ore from Alabama, Georgia, and Tennessee. The largest producing district for brown ore is near Russellville in Franklin County, Alabama where several larger operators are well established. Virginia supplies small quantities of iron oxides for paint-making.

Northeastern States.- New Jersey, New York, and Pennsylvania decreased production and shipments 15 percent and 19 percent, respectively, below 1951. Estimated output totaled 4,400,000 tons of concentrates and lump ore, of which 62 percent came from New York, 23 percent from Pennsylvania, and 15 percent from New Jersey. Virtually all of the ore is reported as magnetite. However, many of the deposits contain a non-magnetic component, termed martite, requiring gravity methods of concentration. Owing to fine particle size of the minerals, Wilfley tables and Humphrey Spirals have proved most effective in recovering the non-magnetic ore.

Western States.- Arkansas, California, Missouri, Nevada, New Mexico, Texas, Utah, and Wyoming contributed iron ore to domestic supply in 1952. Of these California, Nevada, and Utah produced ore for export to Japan as well as for domestic consumption. Production, estimated at 7,800,000 gross tons, was only 5 percent below 1951 inasmuch as strike effects were minimized through early agreements on the part of some integrated operators to accept terms of final settlement. Utah accounted for slightly over half of the total output with California as the next largest producing state. Nevada exported virtually all of its production with a few carloads of hand-picked ore shipped to eastern open-hearth furnaces and a similar quantity for non-metallurgical use. California's production went to furnaces at Fontana with the exception of small tonnages for export and non-metallurgical use. Utah supplied furnaces in California, Colorado, Utah and a substantial portion of the exports to Japan. Texas production was for local furnaces.

Byproduct Ore.- Iron sulfide minerals are burned to form sulfur gases which are processed to sulfuric acid. The residue is of high iron content and is usually suitable as a furnace charge after sintering to remove any remaining sulfur and to obtain satisfactory physical structure. However, if the residue or cinder contains small percentages of arsenic or base metals, its usability as byproduct iron ore suffers. Inasmuch as most United States sulfur products are derived from elemental deposits, the production of pyrites remains small. Nevertheless, large deposits of iron sulfide minerals make byproduct iron ore a factor of potential importance as the magnitude of sulfur requirements outgrows the supply of natural sulfur.

Foreign Trade.- Receipts of iron ore from foreign sources decreased 4 percent below 1951, owing, in part, to a lack of unloading facilities during the steel strike and, in part, to unacceptable price increases for ore from several sources. The preliminary cumulative total for 1952 was 9,760,000 gross tons of which 22 percent came from Sweden, and 19 percent each from Canada, Chile, and Venezuela. Brazil supplied 10 percent, Liberia 6 percent, and eleven other sources together supplied 5 percent. Costa Rica and the Dominican Republic were new sources in 1952, although the material from Costa Rica was for non-metallurgical use. The Venezuelan tonnage was approximately 3 times receipts in 1951. Algerian ore, on the other hand, was a small fraction of the 446,273 tons received in 1951.

Exports of iron ore went principally to Canada and Japan and totaled an estimated 5,200,000 gross tons. About 10 tons of iron ore (presumably oxides of pigment quality) went to Australia and the Canal Zone while Canada and Japan received 76 percent and 24 percent, respectively of the total.

Consumption.- Iron and steel furnaces consumed an estimated 117,500,000 net tons of iron ore, manganiferous iron ore, and sinter during 1952 (in addition to iron ore fines and concentrates, the materials used to make sinter included flue dust, mill cinder, and roll scale which are sometimes classified as home scrap). Approximately 7 percent of these materials were from foreign sources.

Estimates of Iron Ore Produced and Shipped in the United States in 1952 and Actual Output in 1951

District and State	Ore Produced		Ore Shipped			
	1951	1952	1951		1952	
	Gross tons	Gross tons	Gross tons	Value	Gross tons	Value
Lake Superior:						
Michigan---------------	13,703,901	11,600,000	13,611,621	$81,765,748	11,700,000	$460,000,000
Minnesota--------------	78,485,855	64,200,000	78,164,527	411,468,895	64,100,000	
Wisconsin--------------	1,757,234	1,500,000	1,745,120	(1)	1,500,000	
Total--------------	93,946,990	77,300,000	93,521,268	(1)	77,300,000	460,000,000
Southeastern States:						
Alabama----------------	8,185,993	7,200,000	8,181,737	34,799,951	7,200,000	35,000,000
Georgia----------------	357,754	300,000	357,754	1,339,248	300,000	
Tennessee--------------	35,908		35,908	142,447		
Virginia---------------	7,753		7,248	(1)		
Total--------------	8,587,408	7,500,000	8,582,647	(1)	7,500,000	35,000,000
Northeastern States:						
New Jersey-------------	658,745	650,000	657,930	7,810,776	650,000	55,000,000
New York---------------	3,304,385	2,750,000	3,649,531	39,819,368	2,850,000	
Pennsylvania-----------	1,217,829	1,000,000	1,215,033	13,864,139	1,000,000	
Total--------------	5,180,959	4,400,000	5,522,494	61,494,283	4,500,000	55,000,000
Western States:						
Utah-------------------	4,726,159	4,000,000	4,637,239	10,141,653	4,000,000	35,000,000
California-------------	1,198,847	1,400,000	1,182,799	18,355,255	1,400,000	
Texas------------------	1,102,054	800,000	1,053,131		800,000	
Wyoming----------------	616,949	500,000	616,949		500,000	
Other------------------	537,456	1,100,000	505,029		1,100,000	
Total--------------	8,181,465	7,800,000	7,995,147	28,496,908	7,800,000	35,000,000
Byproduct Ore 2/----------	568,631	600,000	569,277	4,665,935	600,000	5,000,000
Grand total------------	116,504,672	3/97,600,000	116,230,052	3/634,728,583	97,700,000	$590,000,000

1/ Included in grand total.

2/ Obtained from treating pyrites in, but not necessarily mined in Colorado, Delaware, Tennessee, and Virginia.

3/ Includes 39,219 tons of Puerto Rican ore.

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MINERAL INDUSTRY SURVEYS
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
DOUGLAS McKAY, Secretary J. J. FORBES, Director

FINAL ANNUAL FIGURES - PLEASE FILE FOR REFERENCE UNTIL PRINTED REPORT IS AVAILABLE.

For immediate release MINERAL MARKET REPORT
M. M. S. No. 2144

SECONDARY ALUMINUM IN 1951

The recovery of secondary aluminum from scrap totaled 292,608 short tons in 1951, an increase of 20 percent over the 243,666 tons reclaimed in 1950. Prices of the various grades of scrap and secondary ingot fluctuated widely during the year. The value of aluminum recovered from scrap computed on the basis of average prices received by primary producers for virgin pig, was $106,509,312. The average value of primary pig increased from 16.43 cents in 1950 to 18.20 cents in 1951. The recoverable aluminum-alloy content of new nonferrous scrap consumed in 1951 increased 29 percent from 1950 to 216,017 short tons. Recovery from old scrap, however, remained about the same totaling 76,591 tons compared with 76,358 tons in 1950.

Despite a partial interruption of aluminum scrap flow beginning in August due to a price roll-back ordered by the Office of Price Stabilization, consumption for the year increased to 332,296 tons compared with 273,192 tons in 1950. Consumption of old scrap decreased, and the large increase in new scrap consumption was due to the increased usage of aluminum during 1950 and 1951. Apparent consumption of primary aluminum was 898,336 tons is 1950 and 975,244 tons in 1951 compared with 635,956 tons in 1949. A considerable part of the process scrap generated from the 1950 consumption was remelted in 1951 and it is to be expected that final figures for 1952 new scrap consumption will reflect the high 1951 usage of primary aluminum.

Price ceilings were below world prices and scrap normally coming into the United States was diverted to foreign markets during the last half of 1951. Competition for scrap between primary producers and independent secondary smelters was keen throughout 1951. Production of primary ingot was so much greater than that of secondary ingot that if all process scrap was returned to its ingot source the secondary smelters would receive only a small percentage of the total. In an amendment to Order M-22, Distribution and Use of Aluminum Scrap, effective December 17, 1951, the National Production Authority added a section to the Order providing that N.P.A. might issue specific directives to any person as to source, destination, consignee or amount of scrap to be delivered or acquired by such person. The amendment, however, took effect too late to greatly affect the flow of scrap in 1951. The aluminum alloy ingot produced by the secondary smelters is used chiefly by the foundries and die casters, but

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Prepared by Clarke E. Wampler and Archie J. McDermid, under the supervision of F. J. Cservenyak, Chief, Light Metals Branch, Minerals Division.

their plants also use some primary ingot and scrap as an auxiliary raw material. The independent secondary smelters consumed 70 percent, primary producers and fabricators 24 percent, and foundries and chemical plants 6 percent of the total aluminum-base scrap used in 1951; these percentages being virtually the same as in 1950.

Effective August 1, 1951, the Bureau of Mines report form for secondary aluminum smelters was changed to bring the classification of ingot up to date and to coincide as nearly as possible with the classification used by the industry. It is, therefore, necessary to show production for the first five months under the old and that for the last seven months under the new classification. Total production of secondary aluminum-base ingot as reported to the Bureau of Mines was 201,669 short tons (an increase of 13 percent) compared with 179,247 tons produced in 1950. Shipments of aluminum castings were 275,217 tons, according to data published by the Bureau of the Census. Assuming that production was equal to shipments and that all of the 201,669 tons of secondary ingot produced were consumed in making castings the other 70-odd thousand tons of castings were made from scrap and from ingot supplied by primary producers.

Imports of aluminum scrap, most of which were actually in pig form, in 1951 were 20,009 tons compared with 67,959 tons in 1950. Exports were 1,460 tons in 1951 and 800 tons in 1950.

Aluminum recovered from scrap processed in the United States, 1950-51, in short tons

Recoverable aluminum-alloy content of scrap processed		
Kind of scrap	1950	1951
New Scrap:		
Aluminum-base 2/. .	166,891	215,753
Copper-base	134	84
Zinc-base	135	122
Magnesium-base . .	148	58
Total	167,308	216,017
Old scrap:		
Aluminum-base 3/. .	75,616	75,942
Copper-base	104	129
Zinc-base..	429	238
Magnesium-base	209	282
Total	76,358	76,591
Grand total . .	243,666	292,608

Aluminum recovered 1/ from scrap processed		
Form of recovery	1950	1951
As metal	2,140	5,341
Aluminum alloys . .	239,577	283,938
In brass and bronze	270	385
In zinc-base alloys	868	1,204
In magnesium alloys	480	346
In chemical compounds	331	1,394
Grand total. . .	243,666	292,608

1/ In accordance with common usage, the term "aluminum" covers aluminum alloys, and the figures include all constituents of the alloys recovered from aluminum-base scrap.

2/ Recoverable aluminum content of new aluminum-base scrap was 156,978 tons in 1950 and 201,563 tons in 1951.

3/ Recoverable aluminum content of old aluminum-base scrap was 70,981 tons in 1950 and 70,713 tons in 1951.

Production of secondary aluminum and aluminum-alloy products in the United States, 1949-51, gross weight in short tons.

Product	1949	1950	1951 1/	
			Jan-July	Aug-Dec.
Secondary aluminum ingot 2/.				
Pure (98.5%) Al	326	2,105	2,422	2,916
Silicon (Cu max. 1%)	7,376	10,393	10,930	—
Al-Si (Cu max 0.6%)	—	—	—	5,048
Silicon (Cu 1 to 2.5%) . . .	3,532	5,395	3,678	—
Al-Si (Cu 0.6% to 2.0%) . . .	—	—	—	3,028
No. 12 & Variations	10,605	18,063	9,263	6,534
Other copper (max Si 2.5%). .	3/ 1,955	4/ 6,043	4/ 2,594	—
Al-Cu alloys (Si max 1.5%). .	—	—	—	4/ 2,225
Copper-silicon (each over 2.5%)	52,900	90,639	62,177	—
No. 319 and variations . . .	—	—	—	13,838
AXS 679 and variations . . .	—	—	—	13,226
Al-Si-Cu-Ni-alloys.	5,152	7,466	7,433	3,062
Deoxidizing and other dissipative uses.	23,828	39,886	24,708	15,801
Aluminum-base hardeners . . .	2,209	4,697	3,399	2,253
Al-Mg and Al-Zn alloys. . . .	2,731	4,907	3,292	—
Al-Mg alloys.	—	—	—	331
Al-Zn alloy	—	—	—	1,342
Miscellaneous	6,892	5/-10,347	1,288	881
Total.	117,506	179,247	131,184	70,485
Secondary aluminum recovered by various producers 6/.	61,990	64,667	77,377	--
Aluminum powder 7/.	17	35	--	--
Aluminum-alloy castings	3,872	11,439	15,394	--
Aluminum in chemicals	441	331	1,394	

1/ Classification of ingot for reporting to the Bureau of Mines was changed August 1, 1951.

2/ Gross weight, including copper, silicon and other alloying elements at independent secondary smelters; total secondary aluminum and aluminum-alloy ingot contained 2,206 tons of primary aluminum in 1949; 5,339 tons in 1950; and 12,353 tons in 1951.

3/ Includes 1,785 tons produced at Naval Air Stations.

4/ Of the total, 1,810 tons were produced in 1950 and 1,438 tons in 1951 at Naval Air Stations and United States Air Force Bases.

5/ Negative production indicates consumption of this material at smelters greater than production.

6/ Secondary aluminum recovered by primary producers and independent fabricators.

7/ Does not include production measured as ingot for graining, powder, atomizing, or chemical purposes.

Stocks and consumption of new and old aluminum scrap at secondary smelters in the United States in 1951, gross weight in short tons. 1/

Scrap item	Stocks beginning of year	Receipts during year	Consumption			Stocks end of year
			New	Old	Total	
2S and 3S sheet and utensils	952	21,574	11,815	9,148	20,963	1,563
Castings and forgings. . . .	2,268	37,247	12,982	26,123	39,105	410
Alloy sheet.	1,219	44,332	35,944	8,572	44,516	1,035
Borings and turnings	1,439	53,856	54,271	—	54,271	1,024
Grindings and sawings . . .	227	1,981	2,117	—	2,117	91
Dross and skimmings.	657	27,120	26,582	—	26,582	1,195
Foil and wire.	350	5,108	726	4,429	5,155	303
Aircraft	991	13,001	—	13,425	13,425	567
Pistons.	125	3,324	—	3,372	3,372	77
Irony aluminum	627	12,016	—	12,383	12,383	260
Miscellaneous.	360	11,137	10,450	—	10,450	1,047
Total	9,215	230,696	154,887	77,452	232,339	7,572

1/ Excludes secondary smelters owned by primary aluminum companies.

Stocks and consumption of new and old aluminum scrap at primary producers and fabricators in the United States in 1951, gross weight in short tons.

Scrap item	Stocks beginning of year	Receipts during year	Consumption			Stocks end of year
			New	Old	Total	
2S and 3S sheet and utensils	1,029	13,975	14,139	289	14,428	576
Castings and forgings. . . .	167	2,951	2,920	182	3,102	16
Alloy sheet.	6,481	43,831	48,740	328	49,068	1,244
Borings and turnings	102	7,325	7,057	—	7,057	370
Dross and skimmings.	25	33	28	—	28	30
Foil	44	1,237	321	928	1,249	32
Aircraft	427	505	—	789	789	143
Miscellaneous.	364	4,705	2,487	2,255	4,742	327
Total	8,639	74,562	75,692	4,771	80,463	2,738

Stocks and consumption of aluminum scrap at foundries and miscellaneous manufacturers in the United States in 1951, gross weight in short tons.

	Stocks beginning of year	Receipts during year	Consumption			Stocks end of year
			New	Old	Total	
2S and 3S sheet and utensils	367	2,865	1,435	1,646	3,081	151
Castings and forgings. . . .	284	5,680	2,246	3,595	5,841	123
Alloy sheet.	58	1,849	1,545	301	1,846	61
Borings and turnings	34	4,583	4,562	--	4,562	55
Dross and skimmings.	--	4,012	2,582	--	2,582	1,430
Foil and wire.	201	157	13	102	115	243
Aircraft	--	511	--	502	502	9
Pistons	--	209	--	200	200	9
Miscellaneous	1	931	294	471	765	167
Total	945	20,797	12,677	6,817	19,494	2,248

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

DOUGLAS McKAY, Secretary
J. J. FORBES, Director

For immediate release

MINERAL MARKET REPORT
M. M. S. No. 2148

ZINC INDUSTRY IN 1952 - PRELIMINARY

In 1952 the smelters in the United States produced 961,200 short tons of slab zinc, or about 3 percent more than in 1951, according to the Bureau of Mines, United States Department of the Interior. The output was second only to the 1943 all-time record, being but 3 percent below the 990,524 tons produced in that year. Domestic mine production of recoverable zinc was 661,023 tons or 3 percent below the 1951 output. Montana was the leading mine producer followed in order by Idaho, Oklahoma, New Jersey, Colorado, New Mexico, Arizona, Utah, and New York. Imports of zinc in ores and concentrates and imports of slab zinc were 49 and 30 percent greater than in 1951, respectively, establishing a record for total zinc in imports that was exceeded only in 1943. Consumption of slab zinc declined from 933,971 tons to 849,289 tons due chiefly to the strike in the steel industry from June 2 to July 25, 1952. Stocks at primary and secondary smelters totaled 86,987 tons on December 31 compared with 21,981 tons at the first of the year. Consumers' stocks increased from 50,071 tons at the beginning of the year to 92,257 tons at the close of the year. Zinc prices were quoted at 19.5 cents per pound for Prime Western grade at East St. Louis until June 2, 1952 when the price dropped to 17.5 cents per pound. Subsequent declines brought the price to 12.5 cents per pound on October 27 where it remained the rest of the year. The average price of slab zinc for all grades was 16.5 cents per pound.

Government regulations. - On July 5, 1951 the National Production Authority issued Order M-9 which placed slab zinc under allocation effective August 1. Under this order no dealer or consumer might accept delivery of 20 short tons or more of slab zinc during any calendar month without an allocation authorization. Amendment 1 to this order, effective January 1, 1952, reduced allowable receipts without allocation authorization from 20 to 10 short tons in any calendar month. Several provisions of Order M-15 were incorporated in Order M-9 as amended March 7, 1952. All NPA restrictions on zinc were revoked on June 27 owing to rising world production of zinc which appears to have overcome the supply shortage.

Production. - Mine production of recoverable zinc (including that recovered as zinc pigments and salts directly from ores) decreased 3 percent in 1952 to 661,023 tons. The decline in production was almost wholly attributed to the drop in price. During the first half of the year production was at an annual rate of 720,000 tons as compared to a rate of 601,000 tons during the second half. The decrease resulted from lower production in all of the states except Illinois, Wisconsin, Oklahoma, New Mexico and Washington. Several mines were closed in the Tri-State district as was the San Xavier mine, Arizona; the Hilarity and Livingston mines, Idaho; the Mike Horse mine, Montana; the Ely Valley and Copper Canyon mines,

Prepared February 25, 1953 by O. M. Bishop and Esther B. Miller, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Nevada; the Oswaldo and Hanover mines, New Mexico; the Park Utah Consolidated and Silver King Coalition mines, Utah; and the Bonanza mine, Washington. Labor strikes in New York, southern Illinois, Kansas, and Utah during the summer months and a power shortage in the Pacific Northwest were other factors in the lessened mine production.

Smelter production of slab zinc, including primary metal from domestic and foreign ores and redistilled secondary metal from scrap (based upon producers' monthly reports) was approximately 961,200 tons, or 30,910 tons greater than in 1951, and only 29,324 tons less than the record year of 1943. Data on which to base estimates as to the amount of slab zinc from foreign and domestic ores are not yet available. The production of redistilled secondary slab zinc increased 9 percent to 53,000 tons and was 6 percent of the total slab zinc production.

It is estimated that zinc content of pigments and salts produced in the United States from zinc ores totaled 115,000 tons in 1952 as compared with 133,845 tons in 1951 and 134,434 tons in 1950.

Zinc Reduction Plants. - During 1952, 18 primary zinc reduction plants were in operation. Of these, 5 were electrolytic plants which produced 351,100 tons of slab zinc, 9 were horizontal retort plants and 4 were vertical retorts. Of the vertical retort plants one is wholly and one is partly electrothermic.

Smelter production was uninterrupted except for the shut down of the U. S. Steel Corporation's Donora smelter during the June-July steel strike and the curtailment of production at the Sullivan Mining Co. electrolytic plant at Kellogg, Idaho because of a hydroelectric power shortage from September through December.

Consumption. - Slab zinc available to consumers (table 6) was 918,768 tons compared with 927,837 tons in 1951. Consumption of slab zinc determined by a monthly canvass of approximately 750 plants was 849,289 tons (including 3,962 tons of remelt) or 9 percent less than in 1951 when measured consumption was 933,971 tons. The difference between apparent and actual consumption as reported by the Bureau of Mines is due in large part to the fact that all Government purchases are not accounted for in the industry reported total of 36,626 tons shipped to Government account.

Consumption of slab zinc for galvanizing and zinc-base alloys was curtailed by the steel strike which reduced manufactures of galvanized steel products, automobiles and other steel products using zinc die castings. Galvanizing consumed 375,563 tons or only 24,716 tons less than in 1951 despite the steel strike. Zinc consumed in zinc-base alloys declined 20 percent to 236,022 tons, but that consumed in brass products increased 8 percent to 155,311 tons.

Stocks. - Slab zinc inventories at producers' plants increased from 21,344 tons to 83,310 tons, and those at secondary smelters increased from 637 tons to 3,677 tons or a total net gain of 65,006 tons. Consumers' stocks almost doubled increasing from 50,071 to 92,257 tons during the year.

Prices. - The ceiling price of 19.5 cents per pound of Prime Western grade, East St. Louis, established by the Office of Price Stabilization on October 2, 1951 remained in effect until June 2, 1952 when increased supplies from domestic and foreign sources and lessened demand resulting from the steel strike forced price reductions for all grades. Prime Western grade was reduced to 17.5 cents per pound. Subsequent drops brought the price to 13.5 cents in August after which the quotation advanced to 14.5 cents on September 12. Thereafter the price declined reaching a low of 12.5 cents per pound on October 27 at which level it remained thereafter to the year's close. The average selling price for all grades for the year is estimated to have been 16.5 cents.

The official London Price was £ 190 per long ton (23.73 cents per pound) until May 22 when the British Ministry of Supply set the price at £ 166 (20.73 cents). Subsequent declines in June, August, September and October brought the price to £ 110 (13.74 cents) on October 29 where it remained for the balance of the year. Exchange rates ranged from $2.78 to $2.80-7/8 per pound Sterling. Conversions to United States currency in foregoing parentheses are based on an average exchange rate of $2.79-3/4 per pound Sterling.

Prices at Antwerp and other European markets fluctuated from a high of 30 cents in the first quarter of 1952 to as little as 9-1/2 cents a pound in the fourth quarter.

Foreign Trade. - Imports of zinc in ore and concentrates increased to 450,500 tons in 1952, 49 percent above 1951 and the greatest quantity imported except in 1943 when 539,049 tons were imported. Of this quantity, 44 percent was from Mexico, 33 percent from Canada, 10 percent from Peru with Spain, Bolivia, and Guantemala contributing most of the remainder.

Imports of slab zinc totaling 114,200 tons were 30 percent above 1951 having been exceeded only in 1949 and 1950 when 126,925 and 155,974 tons, respectively, were imported. Canada with 61 percent was the chief source, followed by Mexico (16 percent) and West Germany, Belgium, Italy, Netherlands, and Yugoslavia.

Exports of slab zinc totaled 55,000 tons in 1952 compared with 36,510 tons in 1951. The United Kingdom received 70 percent of this, followed by France (16 percent), Brazil (7 percent), India (4 percent) and still lesser quantities to Austria, Argentina, West Germany, Switzerland, Chile, Mexico and others.

Tariff. - On June 6, 1951 import duties on slab zinc and ore (zinc content) were established at 0.7 and 0.6 cents per pound, respectively. These duties remained in effect until February 12, 1952 when they were suspended by an Act of Congress which provided for reimposition of the same rates should the average market price of zinc fall to 18 cents a pound for a calendar month. On July 3, the Tariff Commission notified the President that the average price for June was below 18 cents a pound and on July 23 the President ordered reimposition of 0.6 and 0.7 cent duties on ores (zinc content) and slab zinc.

Table 1. - Primary and redistilled secondary slab zinc produced in the United States, 1951-52, in short tons

Year	Primary			Redistilled secondary	Total (excludes remelted)
	Domestic	Foreign	Total		
1951 ..	621,826	1/ 259,807	881,633	48,657	930,290
1952 2/	3/	3/	908,200	53,000	961,200

1/ Includes a small quantity of foreign slab zinc further refined into high grade metal in the United States. 2/ Preliminary figures. 3/ Data not available.

Table 2. - Distilled and electrolytic zinc, primary and secondary, produced in the United States, 1951-52, in short tons

Year	Electrolytic primary	Distilled primary	Redistilled secondary		Total
			At primary smelters	At secondary smelters	
1951	336,087	545,546	16,251	32,406	930,290
1952 1/ .	351,100	557,100	17,000	36,000	961,200

Classified according to grade

Year	Special High Grade	Regular High Grade	Intermediate	Brass Special	Selected	Prime Western	Total
1951	281,571	175,499	20,734	60,511	13,494	378,481	930,290
1952 1/ ...	295,800	173,800	18,300	2/ 473,300			961,200

1/ Preliminary figures. 2/ Separate figures not available.

Table 3. - Stocks of zinc on hand at primary and secondary zinc-reduction plants in the United States at the end of 1951 and 1952, in short tons

	At primary plants	At secondary plants	Total
December 31, 1951 ..	21,344	637	21,981
December 31, 1952 ..	83,310	3,677	86,987

Table 4. - Consumers' stocks of slab zinc at plants at the beginning of 1952 and December 31, 1952, by industries, in short tons

Industries	Galvanizing	Brass mills	Die casters	Zinc rolling mills	Oxide plants	Others	Total
January 1	20,110	14,717	10,137	3,538	320	1,249	1/ 50,071
December 31	46,206	18,333	20,729	4,928	2,061		1/ 92,257

1/ Stocks on January 1 and December 31 exclude 410 tons and 519 tons, respectively, of remelt spelter.

Table 5. - Imports and exports of zinc in 1951 and 1952 in short tons 1/

	Imports		Exports
	Zinc in ore and concentrate	Slab zinc	Slab zinc
1951	303,038	87,983	36,510
1952	450,500	114,200	55,000

1/ From records of the Bureau of Census, U. S. Department of Commerce.

Table 6. - Slab zinc available for shipment to consumers in 1951-52, in short tons

	1951	1952
Supply:		
Stocks at primary smelters Jan. 1	7,948	21,344
Stocks at secondary plants Jan. 1	936	637
Production - primary	881,633	908,200
secondary	48,657	53,000
Imports of slab zinc	87,983	114,200
Total available	1,027,157	1,097,381
Withdrawn:		
Exports of slab zinc	36,510	55,000
Shipments to Government account	40,829	36,626
Stocks at primary smelters Dec. 31	21,344	83,310
Stocks at secondary plants Dec. 31	637	3,677
Total withdrawn	99,320	178,613
Available to consumers	927,837	918,768

Table 7. - Consumption of slab zinc in the United States in 1951 and 1952, by industries, in short tons

	Galvanizing	Brass products	Zn-base alloy	Rolled zinc	Zinc oxide	Other	Total
1951	400,279	143,292	296,434	64,085	18,223	11,658	1/ 933,971
1952:							
January	32,938	15,434	24,478	4,869	2,812		80,531
February	32,707	13,241	20,389	4,662	2,712		73,711
March	34,804	12,020	18,820	3,666	2,660		71,970
April	32,030	11,437	18,069	4,281	2,704		68,521
May	32,959	11,025	17,420	3,797	2,793		67,994
June	12,215	10,307	15,007	3,593	2,190		43,312
July	12,160	8,137	13,422	3,339	1,817		38,875
August	34,840	11,782	17,314	4,814	1,859		70,609
September	37,394	13,682	21,178	4,478	2,097		78,829
October	40,466	17,258	23,286	4,938	2,937		88,885
November	36,333	14,776	21,493	4,372	3,087		80,061
December	36,717	16,212	25,146	4,699	3,217		85,991
Total	375,563	155,311	236,022	51,508	30,885		2/ 849,289

1/ Includes 4,505 tons of remelt zinc.
2/ Includes 3,962 tons of remelt zinc.

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MINERAL INDUSTRY SURVEYS

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DOUGLAS McKAY, Secretary
J. J. FORBES, Director

FOR IMMEDIATE RELEASE

MINERAL MARKET REPORT
NO. MMS 2149

PORTLAND AND OTHER HYDRAULIC CEMENTS IN 1951
FINAL ANNUAL FIGURES

PRODUCTION: - Continued heavy demand resulted in a new record output of cement in 1951. Production of 246,022,476 barrels of portland cement was reported to the Bureau of Mines, United States Department of the Interior - an increase of nearly 9 percent over the 1950 figure. Production of the other hydraulic cements - natural, masonry (natural), and puzzolan (slag-lime) - by 9 plants amounted to 3,449,463 barrels, a decrease of 19 percent from the previous year.

SHIPMENTS: - The demand for portland cement in 1951, as indicated by shipments from mills, was 241,153,272 barrels, valued at $613,170,483, as compared to 227,756,636 barrels, valued at $535,321,123, in 1950. The average value of $2.54 per barrel in 1951 compared with $2.35 in 1950 reflects a continued rise in operating costs. Shipments of "other" hydraulic cements amounted to 3,475,423 barrels - a decrease of 18 percent from the 1950 figure.

STOCKS: - Mill stocks of portland cement on hand December 31, 1951, totaled 17,988,071 barrels - 37 percent greater than on the same date a year earlier. Stocks at the end of 1951 were lower in 2 districts and higher in 17 districts, compared to those at the end of 1950. Stocks of natural, masonry (natural), and puzzolan (slag-lime) cements on hand at the end of 1951 amounted to 163,363 barrels - a decrease of 14 percent from the 1950 year-end figure.

APPARENT CONSUMPTION: - Based on the quantity of cement shipped to destinations in the various States, consumption was higher in 1951 in 29 States and lower in 19 States and the District of Columbia than in 1950. States showing outstanding percentage gains in apparent consumption were Maine, Oregon, Ohio, Florida, and Nevada. Declines were greatest in South Dakota, Arkansas, New Mexico, New Hampshire, and Oklahoma.

CAPACITY: - The estimated annual capacity of the portland cement industry at the end of 1951 was 281,532,328 barrels, compared with 268,273,305 barrels at the end of 1950. The percent of capacity utilized in 1951 was 87.4, compared with 84.3 percent in 1950. Percents of capacity utilized in 1951 were higher in 15 districts and lower in 4 districts than in 1950.

FUEL: - All of the types of fuel used in the portland cement industry were used in greater quantity in 1951 than in 1950. The percentage gains were: Coal, 7 percent; fuel oil, 29 percent; natural gas, 19 percent; and byproduct gas, 30 percent. Coal was the sole fuel used in the production of 48 percent of the total output of cement.

TYPES OF CEMENT: - A breakdown of the total production of portland cement by various types is shown in one of the following tables. The output of each type except oil-well, white, and miscellaneous cements, was higher in 1951 than in 1950. Outstanding gains were made by the low-heat (Type IV), portland-puzzolan, and air-entrained cements.

SHIPMENTS BY TYPES OF CARRIERS: - Shipments of portland cement by rail continued to decline, and this method now accounts for only 72 percent of the total. Truck shipments constituted 27 percent of the total, while the remaining 1 percent was shipped by boat. Bulk shipments of cement again increased considerably, and in 1951 was 61 percent of all shipments.

SURPLUS OR DEFICIENCY IN LOCAL SUPPLY: - The total surplus of 31,214,896 barrels of cement in producing States was distributed as follows: 28,479,713 barrels to non-cement-producing States, Alaska, and Hawaii; 2,727,647 barrels to destinations outside continental United States (excluding local consumption of Puerto Rican production); and 7,536 barrels to unspecified destinations.

Prepared by Oliver S. North, and Esther V. Balser, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

Finished portland cement produced, shipped, and in stock in the United States, 1950-51, by districts

District	Active plants		Production			Shipments from mills								Stocks at mills on Dec. 31		
	1950	1951	Barrels		Percent change from 1950	1950			1951					Barrels		Per-cent change from 1950
			1950	1951		Barrels	Value		Barrels	Value		Percent change from 1950 in--		1950 1/	1951	
							Total	Average		Total	Average	Barrels	Average value			
E.Pa., Maryland---	21	21	34,212,318	36,322,651	+6.2	34,949,454	$83,442,830	$2.39	35,694,374	$91,726,329	$2.57	+2.1	+7.5	1,867,045	2,495,322	+33.7
New York, Maine---	11	11	14,195,537	15,351,223	+8.1	14,398,689	33,600,329	2.33	15,098,821	37,870,008	2.51	+4.9	+7.7	844,452	1,096,854	+29.9
Ohio---------------	9	9	10,606,739	11,873,852	+11.9	10,512,004	24,012,983	2.28	11,872,278	29,498,956	2.48	+12.9	+8.8	853,982	855,556	+0.2
W. Pa., W. Va.----	7	7	9,381,631	10,849,106	+15.6	9,409,191	21,826,459	2.32	11,014,476	27,444,268	2.49	+17.1	+7.3	932,987	767,617	-17.7
Michigan----------	7	7	12,967,102	14,393,599	+11.0	12,854,423	29,619,766	2.30	14,112,639	35,121,324	2.49	+9.8	+8.3	1,317,145	1,598,105	+21.3
Illinois----------	4	4	7,924,079	8,483,783	+7.1	7,857,969	16,920,234	2.15	8,377,387	19,853,132	2.37	+6.6	+10.2	695,490	801,886	+15.3
Ind., Ky., Wisc.--	6	6	13,450,769	14,163,250	+5.3	13,525,250	29,354,637	2.17	13,991,472	33,839,689	2.42	+3.4	+11.5	949,618	1,121,396	+18.1
Alabama-----------	7	7	10,371,834	10,772,991	+3.9	10,574,955	23,175,772	2.19	10,586,825	24,523,073	2.32	+0.1	+5.9	398,650	584,816	+46.7
Tennessee---------	6	6	6,684,644	7,221,968	+8.0	6,663,427	14,682,487	2.20	7,162,841	17,203,080	2.40	+7.5	+9.1	317,894	377,021	+18.6
Va., Ga., Fla., La., S. Car.----	7	9	9,410,357	10,662,877	+13.3	9,398,899	22,663,150	2.41	10,479,709	27,312,775	2.61	+11.5	+8.3	379,203	562,371	+48.3
Iowa--------------	5	5	7,415,625	8,364,692	+12.8	7,231,807	16,157,979	2.23	8,024,492	19,800,084	2.47	+11.0	+10.8	836,773	1,176,973	+40.7
E.Mo.,Minn.,S.Dak.	6	6	11,409,363	11,807,958	+3.5	11,389,872	26,598,857	2.34	11,696,053	29,725,620	2.54	+2.7	+8.5	902,333	1,014,238	+12.4
Kansas------------	6	6	8,616,357	8,514,521	-1.2	8,759,103	19,400,068	2.21	8,163,916	19,413,144	2.38	-6.8	+7.7	313,134	663,739	+112.0
W. Mo., Neb., Okla., Ark.------------	6	6	8,193,685	8,707,964	+6.3	8,239,959	18,635,573	2.26	8,126,910	19,936,315	2.45	-1.4	+8.4	342,664	923,718	+169.6
Texas-------------	11	13	17,150,293	18,132,373	+5.7	17,281,521	39,677,804	2.30	17,642,654	42,648,536	2.42	+2.1	+5.2	498,534	988,253	+98.2
Colo.,Ariz.,Wyo., Mont.,Utah, Idaho	9	10	7,737,195	8,569,555	+10.8	7,886,861	22,628,743	2.87	8,264,888	25,503,189	3.09	+4.8	+7.7	345,208	649,875	+88.3
California--------	11	11	26,277,209	29,918,293	+13.9	26,685,004	65,258,675	2.45	28,956,470	77,753,697	2.69	+8.5	+9.8	817,970	1,779,793	+117.6
Oregon, Washington	9	9	6,802,763	7,671,760	+12.8	6,950,797	19,365,591	2.79	7,589,484	22,744,914	2.00	+9.2	-28.3	431,985	514,261	+19.0
Puerto Rico-------	2	2	3,218,349	4,240,060	+31.7	3,187,451	8,299,186	2.60	4,297,583	11,252,350	2.62	+34.8	+0.8	73,800	16,277	-77.9
Total--------	150	155	226,025,849	246,022,476	+8.8	227,756,636	535,321,123	2.35	241,153,272	613,170,483	2.54	+5.9	+8.1	13,118,867	17,988,071	+37.1
Pennsylvania------	24	24	38,646,260	41,981,431	+8.6	39,450,611	94,604,230	2.40	41,560,431	107,035,506	2.58	+5.3	+7.5	2,503,633	2,924,633	+16.8
Missouri----------	5	5	9,777,855	10,230,449	+4.6	9,779,657	22,751,226	2.33	10,217,421	25,760,473	2.52	+4.5	+8.2	730,151	743,179	+1.8

1/ Revised figures.

Destination of shipments of finished portland cement from mills in the United States, 1949-51, by States

Destination	1949 (barrels)	1950 (barrels)	1951	
			Barrels	Change from 1950 (Percent)
Continental:				
Alabama	2,910,444	3,395,505	3,736,413	+10.0
Arizona	1,262,378	1,572,137	1,681,846	+7.0
Arkansas	2,058,505	2,406,455	1,854,107	-23.0
California	19,943,561	23,508,046	25,191,516	+7.2
Colorado	2,041,456	2,432,616	2,858,840	+17.5
Connecticut 1/	2,381,551	2,629,280	2,770,756	+5.4
Delaware 1/	746,858	806,434	783,892	-2.8
District of Columbia 1/	1,345,897	1,484,834	1,457,896	-1.8
Florida	4,487,460	4,998,502	6,051,603	+21.1
Georgia	2,848,784	3,313,750	3,513,978	+6.0
Idaho	1,041,074	1,004,858	1,154,434	+14.9
Illinois	11,385,563	11,557,409	12,286,321	+6.3
Indiana	5,578,176	5,611,993	6,354,398	+13.2
Iowa	4,844,659	4,828,232	4,948,586	+2.5
Kansas	4,137,843	4,793,853	4,477,884	-6.6
Kentucky	2,402,306	2,559,713	2,925,136	+14.3
Louisiana	3,986,777	4,551,836	5,282,319	+16.0
Maine	638,383	549,577	711,192	+29.4
Maryland	3,498,499	4,406,182	4,398,730	-0.2
Massachusetts 1/	3,542,911	4,161,610	4,153,399	-0.2
Michigan	9,291,483	9,645,331	10,693,060	+10.9
Minnesota	4,441,401	4,896,145	4,520,518	-7.7
Mississippi 1/	1,787,000	1,676,409	1,670,933	-0.3
Missouri	4,541,405	5,852,265	5,663,459	-3.2
Montana	782,781	1,405,328	1,576,885	+12.2
Nebraska	2,537,791	2,538,361	2,356,433	-7.2
Nevada 1/	249,342	325,997	389,815	+19.6
New Hampshire 1/	542,685	520,977	442,168	-15.1
New Jersey 1/	6,109,668	7,239,023	8,231,613	+13.7
New Mexico 1/	1,291,189	2,101,080	1,745,162	-16.9
New York	16,353,001	15,537,337	16,248,279	+4.6
North Carolina 1/	3,048,417	3,699,380	3,683,471	-0.4
North Dakota 1/	725,855	928,766	1,004,990	+8.2
Ohio	10,057,975	10,307,833	12,967,938	+25.8
Oklahoma	3,884,555	4,425,102	3,781,008	-14.6
Oregon	2,559,215	2,603,223	3,349,725	+28.7
Pennsylvania	12,738,153	15,093,106	16,133,233	+6.9
Rhode Island 1/	728,803	845,092	956,077	+13.1
South Carolina	1,488,318	2,069,957	2,313,122	+11.7
South Dakota	1,093,465	1,354,744	1,012,080	-25.3
Tennessee	4,139,920	4,565,588	4,792,334	+5.0
Texas	13,183,797	16,671,621	16,518,808	-0.9
Utah	1,155,920	1,279,828	1,191,237	-6.9
Vermont 1/	445,759	317,345	330,400	+4.1
Virginia	3,832,190	4,068,441	4,719,467	+16.0
Washington	4,031,244	4,210,197	4,518,034	+7.3
West Virginia	2,803,256	1,898,334	1,802,919	-5.0
Wisconsin	4,540,926	5,274,002	5,226,527	-0.9
Wyoming	779,372	649,695	606,912	-6.6
Unspecified	52	35,049	7,536	-78.5
Total continental United States	200,248,023	222,608,378	235,047,389	+5.6
Outside continental United States 2/	5,832,302	5,148,258	6,105,883	+18.6
Total shipped from cement plants	206,080,325	227,756,636	241,153,272	+5.9

1/ Non-cement-producing State.
2/ Direct shipments by producers to foreign countries and to noncontiguous Territories (Alaska, Hawaii, Puerto Rico, etc.), including distribution from Puerto Rican mills.

Production and stocks of portland-cement clinker at mills in the United States in 1951, by months and districts, in thousands of barrels

District	January	February	March	April	May	June	July	August	September	October	November	December
PRODUCTION												
Eastern Pennsylvania, Maryland	2,954	2,578	2,960	3,096	3,124	3,124	3,173	3,202	3,144	3,228	3,083	3,064
New York, Maine	1,254	929	1,208	1,235	1,294	1,285	1,343	1,307	1,367	1,374	1,263	1,251
Ohio	838	795	981	1,027	1,005	1,042	1,061	1,051	1,056	1,108	1,050	967
Western Pennsylvania, West Virginia	837	746	940	892	907	909	923	933	914	980	904	903
Michigan	1,004	912	962	1,196	1,396	1,341	1,373	1,398	1,348	1,445	1,370	1,239
Illinois	721	604	724	705	712	712	693	762	755	769	738	726
Indiana, Kentucky, Wisconsin	1,184	934	1,150	1,161	1,222	1,231	1,185	1,266	1,261	1,352	1,244	1,109
Alabama	928	827	934	899	951	926	922	890	881	933	878	922
Tennessee	572	487	603	636	666	658	647	540	628	686	613	644
Va., Ga., Fla., La., So. Car., Miss. 1/	830	755	800	742	830	1,031	923	884	1,049	1,045	1,045	1,016
Iowa	696	625	517	592	723	629	720	868	804	804	791	788
Eastern Missouri, Minnesota, South Dakota	824	721	962	1,048	1,060	1,041	1,046	1,092	1,071	1,047	965	820
Kansas	617	624	754	761	766	737	618	721	758	807	686	726
Western Missouri, Nebraska, Oklahoma, Arkansas	698	655	552	672	722	792	745	826	753	810	767	803
Texas	1,393	1,241	1,522	1,487	1,572	1,521	1,572	1,609	1,553	1,589	1,564	1,682
Colorado, Arizona, Wyoming, Montana, Utah, Idaho	604	645	698	711	738	761	824	807	762	763	724	684
California	2,363	2,149	2,509	2,487	2,602	2,528	2,574	2,771	2,503	2,588	2,509	2,643
Oregon, Washington	547	489	642	697	685	706	749	717	688	700	641	478
Puerto Rico	268	279	332	349	366	353	349	366	355	368	329	315
United States: 1951	19,132	16,995	19,750	20,393	21,341	21,327	21,440	22,010	21,650	22,396	21,164	20,780
1950	16,358	14,508	15,740	18,141	19,627	19,395	19,767	20,568	20,177	21,431	20,394	20,180

1/ The inclusion of Mississippi begins with December 1951, when the new plant produced a small quantity of clinker.

Production and stocks of portland-cement clinker at mills in the United States in 1951, by months and districts, in thousands of barrels (CON'T)

District	January	February	March	April	May	June	July	August	September	October	November	December
STOCKS (END OF MONTH)												
Eastern Pennsylvania, Maryland	479	528	661	647	602	681	500	422	437	338	349	455
New York, Maine	479	612	840	772	642	529	436	294	247	185	250	289
Ohio	295	375	480	472	498	411	320	264	207	161	155	246
Western Pennsylvania, West Virginia	300	384	500	536	471	491	448	435	264	168	205	281
Michigan	693	1,190	1,257	1,238	1,103	858	720	513	335	279	229	391
Illinois	109	220	281	313	285	228	161	67	6	14	49	55
Indiana, Kentucky, Wisconsin	384	522	669	669	581	484	363	243	178	147	292	257
Alabama	135	157	179	170	151	121	133	108	73	97	96	74
Tennessee	126	126	143	141	159	168	135	134	105	122	102	86
Va., Ga., Fla., La., So. Car., Miss. 1/	111	119	94	109	91	94	74	120	192	135	102	81
Iowa	165	248	335	409	430	438	339	310	315	170	243	287
Eastern Missouri, Minnesota, South Dakota	369	512	479	506	450	403	346	282	225	203	238	263
Kansas	132	127	92	98	89	85	81	114	80	115	118	104
Western Missouri, Nebraska, Oklahoma, Arkansas	130	208	190	153	128	114	114	130	117	147	168	225
Texas	39	82	67	93	125	94	62	72	95	36	83	157
Colorado, Arizona, Wyoming, Montana, Utah, Idaho	288	403	410	385	291	203	167	144	130	129	171	262
California	809	777	739	827	791	718	617	619	630	592	564	731
Oregon, Washington	355	394	503	522	472	465	501	446	378	354	386	414
Puerto Rico	75	113	149	134	123	97	84	134	124	102	82	42
United States: 1951	5,473	7,097	8,068	8,194	7,482	6,682	5,601	4,851	4,138	3,544	3,882	4,700
1950	6,141	7,454	8,821	8,626	8,142	7,346	6,388	4,900	4,029	2,852	2,962	3,925

1/ The inclusion of Mississippi begins with December 1951, when new plant had small stock of clinker on hand at end of year.

Production, shipments from mills, and stocks at mills of finished portland cement in the United States in 1951, by months and districts, in thousands of barrels

District	January	February	March	April	May	June	July	August	September	October	November	December
PRODUCTION												
Eastern Pennsylvania, Maryland	2,884	2,514	2,821	3,030	3,132	3,042	3,282	3,232	3,109	3,246	3,033	2,975
New York, Maine	1,088	772	1,032	1,339	1,446	1,436	1,459	1,469	1,423	1,463	1,205	1,218
Ohio	770	719	853	1,029	955	1,114	1,154	1,093	1,118	1,138	1,051	874
Western Pennsylvania, West Virginia	788	651	826	842	982	884	997	954	1,100	1,101	888	837
Michigan	592	404	864	1,166	1,458	1,524	1,464	1,554	1,506	1,428	1,377	1,057
Illinois	634	483	655	670	733	757	752	825	804	757	694	721
Indiana, Kentucky, Wisconsin	1,034	775	990	1,142	1,296	1,329	1,316	1,390	1,305	1,374	1,098	1,112
Alabama	849	793	907	896	959	944	901	903	915	902	869	939
Tennessee	515	474	576	624	628	639	668	533	639	656	618	653
Virginia, Georgia, Florida, Louisiana, South Carolina	789	727	789	706	845	972	919	818	953	1,073	1,043	1,020
Iowa	666	544	422	518	696	611	827	904	778	935	721	742
Eastern Missouri, Minnesota, South Dakota	689	561	1,008	1,041	1,148	1,096	1,120	1,163	1,142	1,084	945	806
Kansas	585	625	757	750	759	744	623	693	785	765	696	733
Western Missouri, Nebraska, Oklahoma, Arkansas	645	561	577	714	751	835	745	826	780	777	750	743
Texas	1,417	1,185	1,527	1,459	1,531	1,547	1,599	1,589	1,525	1,583	1,571	1,601
Colorado, Arizona, Wyoming, Montana, Utah, Idaho	484	526	683	730	827	845	856	825	775	757	670	591
California	2,240	2,173	2,558	2,395	2,643	2,544	2,683	2,594	2,492	2,623	2,527	2,465
Oregon, Washington	459	455	534	685	745	720	711	793	762	732	616	460
Puerto Rico	306	259	324	398	390	401	363	356	353	403	365	322
United States: 1951	17,434	15,201	18,708	20,134	21,924	21,934	22,439	22,514	22,269	22,797	20,737	19,874
1950	15,202	13,115	14,301	18,134	19,941	20,001	20,709	21,884	20,945	22,461	20,226	19,116

Production, shipments from mills, and stocks at mills of finished portland cement in the United States in 1951, by months and districts, in thousands of barrels (CON'T)

District	January	February	March	April	May	June	July	August	September	October	November	December
SHIPMENTS												
Eastern Pennsylvania, Maryland	1,855	1,581	2,947	3,390	3,701	3,614	3,492	3,717	3,354	3,721	2,626	1,696
New York, Maine	531	490	997	1,392	1,773	1,732	1,537	1,693	1,487	1,742	1,062	617
Ohio	421	388	796	1,052	1,357	1,432	1,391	1,358	1,125	1,292	847	413
Western Pennsylvania, West Virginia	382	372	663	820	1,124	1,214	1,217	1,468	1,236	1,335	782	405
Michigan	452	375	670	1,082	1,659	1,777	1,731	1,886	1,518	1,579	924	460
Illinois	185	180	505	659	1,053	1,063	1,020	1,107	978	914	454	259
Indiana, Kentucky, Wisconsin	502	453	933	1,191	1,552	1,646	1,605	1,695	1,527	1,452	935	500
Alabama	796	741	863	930	1,015	980	938	913	877	962	889	683
Tennessee	416	427	652	648	680	658	654	636	632	712	633	416
Virginia, Georgia, Florida, Louisiana, South Carolina	769	625	808	764	879	952	945	898	926	1,117	1,027	769
Iowa	156	219	383	640	907	1,006	926	1,051	1,009	1,204	335	189
Eastern Missouri, Minnesota, South Dakota	421	328	780	1,044	1,338	1,325	1,179	1,378	1,274	1,514	763	352
Kansas	432	340	612	718	762	692	590	812	801	1,171	804	428
Western Missouri, Nebraska, Oklahoma, Arkansas	424	353	622	750	854	764	784	844	827	969	568	368
Texas	1,394	1,130	1,476	1,427	1,584	1,534	1,606	1,645	1,345	1,733	1,479	1,289
Colorado, Arizona, Wyoming, Montana, Utah, Idaho	402	386	659	802	925	881	848	894	809	816	532	311
California	2,073	2,269	2,496	2,400	2,522	2,555	2,533	2,643	2,450	2,740	2,358	1,941
Oregon, Washington	324	361	498	797	782	734	802	829	735	753	608	369
Puerto Rico	301	276	318	415	400	357	411	374	343	408	368	326
United States: 1951	12,236	11,294	17,678	20,921	24,867	24,916	24,259	25,341	23,253	26,134	17,994	11,791
1950	9,632	9,324	14,669	18,424	22,334	24,749	23,167	25,144	22,910	24,167	19,791	12,477

Production, shipments from mills, and stocks at mills of finished portland cement in the United States in 1951, by months and districts, in thousands of barrels (CON'T)

District	January	February	March	April	May	June	July	August	September	October	November	December
STOCKS (END OF MONTH)												
Eastern Pennsylvania, Maryland	2,866	3,799	3,673	3,364	2,794	2,222	2,012	1,527	1,282	808	1,215	2,494
New York, Maine	1,426	1,706	1,739	1,684	1,350	1,051	922	697	635	354	496	1,097
Ohio	1,202	1,534	1,596	1,573	1,171	853	616	351	344	190	394	856
Western Pennsylvania, West Virginia	1,339	1,619	1,782	1,804	1,662	1,331	1,111	598	462	229	335	767
Michigan	1,457	1,437	1,680	1,764	1,563	1,310	1,043	711	699	548	1,001	1,598
Illinois	1,145	1,447	1,597	1,608	1,288	983	715	432	258	101	341	802
Indiana, Kentucky, Wisconsin	1,470	1,792	1,850	1,801	1,549	1,231	950	644	419	344	507	1,119
Alabama	452	504	543	513	457	422	385	374	409	349	328	585
Tennessee	418	464	389	365	312	293	307	204	212	156	141	377
Virginia, Georgia, Florida, Louisiana, South Carolina	408	510	490	432	398	418	393	312	339	295	311	562
Iowa	1,347	1,672	1,711	1,589	1,378	984	884	737	507	238	623	1,176
Eastern Missouri, Minnesota, South Dakota	1,180	1,412	1,640	1,638	1,449	1,219	1,156	948	817	387	570	1,025
Kansas	466	750	895	927	925	977	1,009	891	874	468	360	664
Western Missouri, Nebraska, Oklahoma, Arkansas	563	771	726	690	588	658	619	602	554	362	544	924
Texas	526	581	631	662	609	622	615	559	739	588	680	992
Colorado, Arizona, Wyoming, Montana, Utah, Idaho	427	568	592	520	421	385	393	324	291	231	370	650
California	888	889	949	945	1,066	1,056	1,205	1,157	1,198	1,082	1,257	1,781
Oregon, Washington	563	657	693	581	545	531	440	404	431	409	417	508
Puerto Rico	79	62	69	51	41	84	37	19	29	23	20	16
United States: 1951	18,222	22,224	23,250	22,511	19,566	16,630	14,812	11,491	10,499	7,162	9,910	17,993
1950	20,275	23,583	23,216	22,936	20,050	15,298	12,848	9,608	7,642	5,945	6,382	1/13,024

1/ Revised figure.

tland-cement-manufacturing capacity of the United States, 1950-51, by districts

District	Estimated capacity (barrels)		Percent of capacity utilized	
	1950	1951	1950	1951
Eastern Pennsylvania, Maryland	38,916,493	39,642,627	87.9	91.6
New York, Maine	17,084,962	17,606,719	83.1	87.2
Ohio	12,994,125	13,094,125	81.6	90.7
Western Pennsylvania, West Virginia	14,971,300	14,821,300	62.7	73.2
Michigan	15,793,782	16,452,410	82.1	87.5
Illinois	9,460,680	9,459,260	83.8	89.7
Indiana, Kentucky, Wisconsin	17,929,470	18,431,172	75.0	76.8
Alabama	11,365,650	11,411,390	91.3	94.4
Tennessee	8,072,000	7,822,000	82.8	92.3
Virginia, Georgia, Florida, Louisiana, South Carolina	10,361,248	14,129,745	90.8	75.5
Iowa	8,953,515	9,349,570	82.8	89.5
Eastern Missouri, Minnesota, South Dakota	13,156,720	14,022,400	86.7	84.2
Kansas	9,465,385	9,510,984	91.0	89.5
Western Missouri, Nebraska, Oklahoma, Arkansas	8,786,759	9,205,781	93.3	94.6
Texas	18,656,000	21,356,000	91.9	84.9
Colorado, Arizona, Wyoming, Montana, Utah, Idaho	9,490,000	10,241,800	81.5	83.7
California	30,870,000	32,620,000	85.1	91.7
Oregon, Washington	8,095,216	8,247,825	84.0	93.0
Puerto Rico	3,850,000	4,107,220	83.6	103.2
Total	268,273,305	281,532,328	84.3	87.4

Portland cement produced in the United States,[1] 1950-51, by kind of fuel

Fuel	Finished cement produced			Fuel consumed[2]		
	Number of plants	Barrels of 376 pounds	Percent of total	Coal (short tons)	Oil (barrels of 42 gallons)	Natural gas (M cubic feet)
1950						
Coal	74	3/110,150,316	48.7	6,376,924	----------	----------
Oil	12	3/17,167,298	7.6	----------	3,493,368	----------
Natural gas	12	3/19,675,354	8.7	----------	----------	28,477,976
Coal and oil	13	16,596,069	7.3	774,820	965,778	----------
Coal and natural gas	19	26,361,132	11.7	683,407	----------	4/23,921,835
Oil and natural gas	11	23,919,066	10.6	----------	712,493	27,430,007
Coal, oil, and natural gas	9	12,156,614	5.4	108,012	89,589	17,334,741
Total	150	226,025,849	100.0	5/7,943,163	5,261,228	97,164,559
1951						
Coal	74	3/117,979,253	48.0	6,760,011	----------	----------
Oil	14	3/22,127,409	9.0	----------	4,562,162	----------
Natural gas	16	3/23,415,074	9.5	----------	----------	33,656,280
Coal and oil	12	17,004,568	6.9	824,485	726,936	----------
Coal and natural gas	19	28,188,353	11.5	633,417	----------	6/27,960,369
Oil and natural gas	9	22,227,639	9.0	----------	763,205	24,237,164
Coal, oil, and natural gas	11	15,080,180	6.1	306,806	300,009	16,886,423
Total	155	246,022,476	100.0	7/8,524,719	6,352,312	102,740,236

1/ Including Puerto Rico. There was no production in Hawaii.
2/ Figures compiled from monthly estimates of producers.
3/ Average consumption of fuel per barrel of cement produced was as follows: 1950--Coal, 115.8 pounds; oil, 0.2035 barrel; natural gas, 1,447 cubic feet. 1951--Coal, 114.6 pounds; oil, 0.2062 barrel; natural gas, 1,437 cubic feet.
4/ Includes 178,236 M cubic feet of byproduct gas.
5/ Comprises 22,034 tons of anthracite and 7,921,129 tons of bituminous coal.
6/ Includes 231,996 M cubic feet of byproduct gas.
7/ Comprises 18,081 tons of anthracite and 8,506,638 tons of bituminous coal.

Portland cement produced and shipped in the United States,[1] 1947-51, by types

Type and year	Active plants	Production (barrels)	Shipments		
			Barrels	Value	
				Total	Average
General use and moderate heat (types I and II):					
1947	150	157,525,464	158,637,287	$297,619,024	$1.88
1948	150	174,909,904	173,365,414	374,584,386	2.16
1949	150	177,597,585	174,569,746	396,817,234	2.27
1950	150	191,994,091	193,693,533	449,842,513	2.32
1951	155	207,702,941	203,279,206	510,975,002	2.51
High-early-strength (type III):					
1947	87	6,015,985	5,899,830	13,284,390	2.25
1948	87	5,513,312	5,615,894	14,224,177	2.53
1949	87	5,979,435	5,649,482	15,047,036	2.66
1950	90	6,667,974	6,607,172	18,094,386	2.74
1951	96	7,455,107	7,294,686	21,494,894	2.95
Low-heat (type IV):					
1947	5	125,113	137,469	252,721	1.84
1948	3	135,871	153,994	306,962	1.99
1949	6	159,739	129,411	329,284	2.54
1950	5	328,879	271,559	682,008	2.51
1951	6	900,624	790,819	2,647,460	3.35
Sulfate-resisting (type V):					
1947	5	64,126	94,455	231,523	2.45
1948	6	204,862	163,127	505,710	3.10
1949	5	95,023	113,370	472,016	4.16
1950	4	4,070	49,152	141,888	2.89
1951	3	9,908	87,635	342,689	3.91
Oil-well:					
1947	18	1,701,305	1,708,719	3,592,577	2.10
1948	14	1,817,746	1,966,854	4,972,499	2.53
1949	17	1,714,938	1,745,908	4,554,603	2.61
1950	17	1,829,651	1,830,167	4,735,423	2.59
1951	15	1,508,252	1,630,305	4,581,109	2.80
White:					
1947	4	855,323	837,489	3,762,417	4.49
1948	4	1,034,500	1,005,356	4,510,169	4.49
1949	4	1,071,100	1,031,408	4,985,107	4.83
1950	5	1,175,490	1,187,202	5,637,101	4.75
1951	4	1,139,500	1,109,088	5,631,518	5.08
Portland-puzzolan:					
1947	5	1,519,961	1,529,551	2,970,919	1.94
1948	6	1,545,584	1,693,207	3,733,436	2.20
1949	4	1,080,848	1,147,694	2,602,853	2.27
1950	5	1,369,764	1,321,223	3,232,282	2.45
1951	6	2,279,023	2,250,280	5,602,288	2.49
Air-entrained:					
1947	73	17,850,165	17,768,010	32,359,835	1.82
1948	73	19,421,610	19,453,359	40,322,716	2.07
1949	78	21,266,590	20,940,562	46,091,687	2.20
1950	80	21,717,585	21,860,316	50,107,196	2.29
1951	79	24,201,376	23,885,423	59,247,898	2.48
Miscellaneous:[2]					
1947	20	861,905	879,059	2,140,570	2.44
1948	20	864,874	887,457	2,518,018	2.84
1949	24	762,159	752,744	2,277,212	3.03
1950	24	938,345	936,312	2,848,326	3.04
1951	23	825,745	825,830	2,647,625	3.21
Grand total:					
1947	150	186,519,347	187,491,869	356,213,976	1.90
1948	150	205,448,263	204,304,662	445,678,073	2.18
1949	150	209,727,417	206,080,325	473,177,032	2.30
1950	150	226,025,849	227,756,636	535,321,123	2.35
1951	155	246,022,476	241,153,272	613,170,483	2.54

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[1] Including Puerto Rico. There was no production in Hawaii.
[2] Includes hydroplastic, plastic, and waterproofed cements.

Shipments of portland cement from mills in the United States,1/ 1948-51, in bulk and in containers, by types of carriers
(Barrels of 376 pounds)

Type of carrier	In bulk		In containers				Total shipments	
			Bags					
	Barrels	Per-cent	Paper (barrels)	Cloth (barrels)	Other containers2/ (barrels)	Total (barrels)	Barrels	Per-cent
1948								
Truck	3/4/ 16,966,945	3/19.9	16,242,337	1,329,250	------	17,571,587	34,538,532	16.9
Railroad	3/66,769,925	78.4	82,889,312	16,513,115	15,850	99,418,277	166,188,202	81.3
Boat	1,440,323	1.7	2,103,000	34,605	------	2,137,605	3,577,928	1.8
Total	85,177,193	100.0	101,234,649	17,876,970	15,850	119,127,469	204,304,662	100.0
Percent of total	41.7	-----	49.5	8.8	(5)	58.3	100.0	-----
1949								
Truck	4/24,347,015	23.9	3/16,683,392	1,445,980	------	3/18,129,372	42,476,387	20.6
Railroad	75,382,590	74.0	3/72,029,343	13,042,686	9,335	3/85,081,364	160,463,954	77.9
Boat	2,171,648	2.1	3/936,088	32,123	125	3/968,336	3,139,984	1.5
Total	101,901,253	100.0	89,648,823	14,520,789	9,460	104,179,072	206,080,325	100.0
Percent of total	49.5	-----	43.5	7.0	(5)	50.5	100.0	-----
1950								
Truck	4/32,813,799	26.4	21,554,555	357,547	------	21,912,102	54,725,901	24.0
Railroad	89,209,877	71.6	77,911,406	2,979,928	11,318	80,902,652	170,112,529	74.7
Boat	2,495,582	2.0	400,752	21,418	454	422,624	2,918,206	1.3
Total	124,519,258	100.0	99,866,713	3,358,893	11,772	103,237,378	227,756,636	100.0
Percent of total	54.7	-----	43.8	1.5	(5)	45.3	100.0	-----
1951								
Truck	4/42,899,170	29.2	22,366,199	186,924	------	22,553,123	65,452,293	27.2
Railroad	102,233,611	69.5	70,327,861	673,634	8,558	71,010,053	173,243,664	71.8
Boat	1,940,483	1.3	496,895	18,416	1,521	516,832	2,457,315	1.0
Total	147,073,264	100.0	93,190,955	878,974	10,079	94,080,008	241,153,272	100.0
Percent of total	61.0	-----	38.6	0.4	(5)	39.0	100.0	-----

1/ Includes Puerto Rico.

2/ Includes steel drums and iron and wood barrels.

3/ Revised figure.

4/ Includes cement used at mills by producers as follows--1948: 645,420 barrels; 1949: 643,174 barrels; 1950: 929,451 barrels; 1951: 1,368,117 barrels.

5/ Less than 0.05 percent.

Estimated surplus or deficiency in local supply of portland cement in cement-producing States, 1950-51, in barrels

State or division	1950			1951		
	Shipments from mills	Estimated consumption	Surplus or deficiency	Shipments from mills	Estimated consumption	Surplus or deficiency
Alabama	10,574,955	3,395,505	+7,179,450	10,586,825	3,736,413	+6,850,412
California	26,685,004	23,508,046	+3,176,958	28,956,470	25,191,516	+3,764,954
Illinois	7,857,969	11,557,409	-3,699,440	8,377,387	12,286,321	-3,908,934
Iowa	7,231,807	4,828,232	+2,403,575	8,024,492	4,948,586	+3,075,906
Kansas	8,759,103	4,793,853	+3,965,250	8,163,916	4,477,884	+3,686,032
Michigan	12,854,423	9,645,331	+3,209,092	14,112,639	10,693,060	+3,419,579
Missouri	9,779,657	5,852,265	+3,927,392	10,217,421	5,663,459	+4,553,962
Ohio	10,512,004	10,307,833	+204,171	11,872,278	12,967,938	-1,095,660
Pennsylvania	39,450,611	15,093,106	+24,357,505	41,560,431	16,133,233	+25,427,198
Puerto Rico	3,187,451	1,711,217	+1,476,234	4,297,583	2,519,095	+1,778,488
Tennessee	6,663,427	4,565,588	+2,097,839	7,162,841	4,792,334	+2,370,507
Texas	17,281,521	16,671,621	+609,900	17,642,654	16,518,808	+1,123,846
Colorado, Arizona, Wyoming Montana, Utah, and Idaho	7,886,861	8,344,462	-457,601	8,264,888	9,070,154	-805,266
Oregon and Washington	6,950,797	6,813,420	+137,377	7,589,484	7,867,759	-278,275
Georgia, Kentucky, Virginia, Florida, Louisiana, and South Carolina	10,732,533	21,562,199	-10,829,666	11,913,915	24,805,625	-12,891,710
Indiana, Wisconsin, Minnesota, Nebraska, Oklahoma, South Dakota, and Arkansas	22,041,790	26,506,802	-4,465,012	22,162,808	25,105,071	-2,942,263
Maryland and West Virginia	4,908,034	6,304,516	-1,396,482	5,148,419	6,201,649	-1,053,230
New York and Maine	14,398,689	16,086,914	-1,688,225	15,098,821	16,959,471	-1,860,650
Total	227,756,636	197,548,319	+30,208,317	241,153,272	209,938,376	+31,214,896

Natural, masonry (natural), and puzzolan (slag-lime) cements produced, shipped, and in stock at mills in the United States, 1947-51

Year	Production		Shipments		Stocks on Dec. 31 (barrels of 376 pounds)
	Active plants	Barrels (376 pounds)	Barrels (376 pounds)	Value	
1947--------	9	2,951,098	2,927,885	$5,764,398	145,408
1948--------	9	3,440,248	3,375,135	7,734,289	209,901
1949--------	9	3,185,229	3,233,525	8,006,361	161,605
1950--------	9	4,246,299	4,218,580	10,629,586	1/189,323
1951--------	9	3,449,463	3,475,423	9,832,956	163,363

1/ Revised figure.

Hydraulic cement exported from the United States, 1947-51
(U. S. Department of Commerce)

Year	Barrels	Value	Percent of total shipments from mills
1947	1/6,771,250	1/$21,826,718	3.6
1948	5,922,163	20,917,176	2.9
1949	4,561,899	15,960,954	2.2
1950	2,418,435	7,274,564	1.1
1951	2,932,787	9,963,721	1.2

1/ Exclusive of 198,723 barrels, valued at $839,916 exported under the Army Civilian Supply Program.

Hydraulic cement imported for consumption in the United States, 1947-51
(U. S. Department of Commerce)

Year	Barrels	Value	Year	Barrels	Value
1947	4,606	$28,668	1950	1/1,409,974	$3,610,056
1948	282,752	785,120	1951	892,703	3,162,960
1949	109,821	329,969			

1/ Revised figure.

World production of hydraulic cement, by countries,[1/] 1947-51, in thousands of metric tons

(Compiled by Helen L. Hunt)

Country [1/]	1947	1948	1949	1950	1951
North America:					
Canada (sold or used by producers).........	1,895	2,243	2,527	2/2,658	2,687
Cuba..........................	276	285	312	316	3/383
Dominican Republic........	17	43	54	70	104
Guatemala.................	28	32	36	42	57
Mexico......................	2/999	2/1,080	1,228	2/1,528	1,615
Nicaragua..................	16	16	16	17	20
Panama......................	...	41	54	51	75
United States.............	32,315	35,626	36,313	39,273	42,548
South America:					
Argentina..................	1,363	1,252	1,452	2/1,572	1,543
Bolivia.....................	39	39	42	3/36	33
Brazil......................	914	1,112	1,281	1,382	1,440
Chile.......................	602	540	495	513	698
Colombia..................	346	364	475	580	641
Ecuador....................	33	40	52	58	79
Peru........................	256	282	281	331	367
Uruguay...................	281	287	293	305	301
Venezuela................	146	215	285	501	621
Europe:					
Austria....................	281	721	1,091	2/1,289	1,475
Belguim....................	2,609	3,331	2,925	3,557	4,395
Bulgaria...................	(4)	3/325	(4)	(4)	(4)
Czechoslovakia..........	1,404	1,650	1,738	(4)	(4)
Denmark..................	634	769	834	873	985
Finland....................	418	556	656	743	829
France.....................	3,855	5,379	6,443	7,208	8,125
Saar......................	76	160	206	208	234
Germany:					
West Germany..........	2,996	5,581	8,460	10,877	12,204
East Germany...........	(4)	765	1,000	(4)	(4)
Greece....................	182	288	3/326	352	432
Hungary..................	209	3/145	3/640	(4)	(4)
Ireland....................	291	398	2/431	444	(4)
Italy........................	2,754	3,144	4,037	5,004	5,578
Luxembourg.............	89	102	121	125	132
Netherlands..............	519	589	552	593	702
Norway....................	473	526	592	2/582	720
Poland.....................	1,522	1,824	2,200	2/2,512	2,688
Portugal..................	428	498	521	573	644
Rumania..................	422	452	560	650	(4)
Spain.......................	2,186	2,331	2,248	2/2,522	2,741
Sweden....................	1,550	1,486	1,698	2/1,936	2,012
Switzerland.............	995	2/1,022	2/977	1,078	1,315
U. S. S. R. 3/............	4,800	6,600	8,000	10,500	12,400
United Kingdom.........	7,072	8,657	9,364	9,913	10,388
Yugoslavia..............	1,233	1,188	1,300	1,219	1,145
Asia:					
Ceylon.....................	...	...	...	...	63
China......................	416	(4)	5/218	5/430	(4)
Hong Kong..............	34	53	59	68	72
India 6/....................	1,471	1,578	2,136	2,652	3,252
Indochina.................	40	97	154	144	212
Indonesia.................	10	38	(4)	(4)	3/100
Iran 7/.....................	8/43	65	59	64	65
Iraq.........................	...	...	7	66	9/75
Israel......................	328	160	241	380	439
Japan......................	1,236	2/1,859	2/3,277	2/4,463	6,548
Korea:					
Korea, Republic of......	18	17	24	10	(4)
North Korea............	3/150	(4)	(4)	(4)	(4)
Lebanon..................	167	209	233	263	303
Pakistan..................	(10)	2/228	2/429	421	507
Philippines, Republic of the	134	120	201	292	309
Syria.......................	48	54	58	68	64
Taiwan (Formosa) 3/.......	193	2/236	281	332	389
Thailand..................	59	83	127	166	312
Turkey....................	350	345	2/377	2/396	396

See footnotes at end of table.

CONTINUED ON FOLLOWING PAGE 12

World production of hydraulic cement, by countries, 1/ 1947-51, in thousands of metric tons-- CONTINUED

(Compiled by Helen L. Hunt)

Country 1/	1947	1948	1949	1950	1951
Africa:					
Algeria	128	130	128	2/324	448
Belgian Congo	115	127	2/144	2/174	205
Egypt	648	768	2/889	2/900	1,145
Ethiopia 3/	(4)	8	8	(4)	(4)
French Morocco	219	262	264	321	377
Madagascar	7	4	6	5	5
Mozambique	36	37	46	50	77
Southern Rhodesia	71	2/71	83	156	163
Tunisia	115	162	168	169	187
Union of South Africa	1,252	1,308	1,363	1,847	1,953
Oceania:					
Australia 11/	896	1,030	2/1,076	2/1,278	1,236
New Zealand	219	247	254	256	163
Total 1/	2/85,800	2/102,200	2/115,000	131,500	147,200

1/ In addition to countries listed, hydraulic cement is produced in Albania and Eritrea, but production is believed to be negligible.

2/ Revised figure.

3/ Estimate.

4/ Data not available; estimate by senior author of chapter included in total.

5/ Manchuria only.

6/ Beginning September 1947, excludes Pakistan.

7/ Fiscal year ended March 20 of year following that stated.

8/ Production in Government-operated plants only.

9/ Fiscal year ended March 31 of year following that stated.

10/ Included in India.

11/ Fiscal year ended June 30 of year stated.

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UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

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DOUGLAS McKAY, Secretary J. J. FORBES, Director

FOR IMMEDIATE RELEASE

MINERAL MARKET REPORT
MMS NO. 2150

LEAD AND ZINC PIGMENTS AND ZINC SALTS IN 1952
(Preliminary Annual Report)

Shipments of all lead and zinc pigments and zinc salts in 1952 were well below the 1951 rate, according to the Bureau of Mines, United States Department of the Interior. Decreases were varied, ranging from 4 percent for zinc oxide to 39 percent for lithopone. Shipments of litharge, red lead, leaded zinc oxide, and white lead decreased 8, 11, 12, and 30 percent, respectively, in 1952. Zinc chloride and zinc sulfate deliveries were down 19 and 21 percent, respectively, from the 1951 totals. Decreases in shipments of pigments and salts are attributed partly to decreases in the volume of business in industries that are important consumers of these products and partly to increased use of substitutes. In 1952 the production of passenger automobiles was 19 percent lower than that in 1951 and output of trucks and buses declined 15 percent from the 1951 total. Consumption of natural and synthetic rubber increased 4 percent compared with 1951. The value of public and private construction was 5 percent greater than in 1951 and the value of sales of paint, varnish, and lacquer materials in 1952 was approximately the same as the 1951 total. Construction gains reflected, in part, higher material and labor costs.

Lead and zinc, the chief raw materials of the pigments industry, were in plentiful supply during the latter half of the year in contrast with 1951 and the first several months of 1952 when demand exceeded available supplies. Increased production of both lead and zinc on a world-wide basis, permitted greatly expanded imports, which combined with lower consumption in the United States resulted in an oversupply situation in both metals, and brought about marked reductions in prices as the year progressed. The price for common lead, New York, dropped from the 19-cent-a-pound ceiling established in October 1951, to 18 cents per pound on April 29 and was selling for 14.75 cents at the end of the year. The quotation for Prime Western grade slab zinc, East St. Louis, fell from 19.5 cents, first effective in October 1951, to 17.50 cents on June 2 and thereafter declined to 12.50 cents per pound on October 27 at which level it remained for the remainder of the year.

All National Production Authority restrictions on lead and zinc were revoked completely on May 15 and June 27, respectively, owing to the increased abundance of these metals.

Prepared March 2, 1953 by Robert L. Mentch, under the supervision of C. W. Johnson, Chief, Base Metals Branch, Minerals Division.

Some lead and zinc pigments and zinc salts shipped by domestic manufacturers in the United States, 1949-52, in short tons

	1949	1950	1951	1952
Basic lead sulfate or sublimed lead:				
White	(1)	(1)	(1)	(1)
Blue	(1)	(1)	(1)	(1)
Red lead	24,866	35,072	35,352	31,565
Orange mineral	......	......	......	(1)
Litharge	121,052	177,658	154,753	142,855
White lead:				
Dry	15,719	28,506	23,359	12,168
In oil 2/	11,636	16,670	12,056	12,654
Zinc oxide	110,132	160,829	147,716	141,568
Leaded zinc oxide	36,722	63,973	44,341	39,007
Lithopone	78,335	105,650	102,837	62,604
Zinc chloride, 50° B....	55,208	64,564	60,730	49,174
Zinc sulfate	20,065	23,912	23,524	18,521

1/ Bureau of Mines not at liberty to publish figures.
2/ Weight of white lead only.

Shipments of white lead (dry) in 1952 declined 48 percent from the 1951 rate while shipments of the "in oil" variety increased slightly during the year although remaining at a very low level. Total shipments of white lead were the smallest by far since long before the beginning of the present century, reflecting, to a great extent, increased competition from other white pigments, principally titanium dioxide. Shipments of litharge and red lead decreased 8 percent and 11 percent, respectively, in 1952 and were the lowest since the moderate recession year of 1949.

Zinc oxide (lead-free) shipments in 1952 were 4 percent lower than the 1951 total but remained slightly above average yearly shipments during the World War II period. Leaded zinc oxide (all grades) shipments dropped 12 percent from the 1951 rate of deliveries to consumers. Shipments of lithopone were down 39 percent or more than 40,000 tons from the previous year and were considerably below shipments for all years from 1922-51, inclusive. Competition from other materials was the principal reason for reduced shipments.

Shipments of the zinc salts also decreased in 1952; zinc chloride and zinc sulfate declined 19 percent and 21 percent, respectively.

Prices. - Lead and zinc pigment price quotations maintained their historically close relationship to pig lead and slab zinc prices throughout the year. Quotations for all of the pigments covered by this report fell as lead and zinc metal prices declined. Ending quotations ranged from 7 percent (lithopone) to 20 percent (leaded zinc oxide) lower than beginning prices.

Lead and zinc pigment prices in 1952, in cents per pound

	Beginning	End
White lead, basic carbonate, bags, less carlots, shipping point, freight allowed	21.10	17.25
Red lead, 95% Pb_3O_4 or less, barrels, less carlots, shipping point, freight allowed	22.55 - 22.57	18.50
Litharge, commercial, powdered, barrels, less carlots, shipping point, freight allowed	21.65	17.50
Zinc oxide, American process, lead-free, bags, less carlots, delivered	18.60	15.25
Zinc oxide, leaded, bags, less carlots, delivered 5%	18.60	15.25
35%	19.15	15.40
50%	19.35	15.50
Lithopone, ordinary, bags, less carlots, delivered	8.90	8.25 - 8.50

The price for zinc chloride, 50 percent solution, tanks, works, was quoted at $4.10 per 100 pounds during the year. Zinc sulfate, crystals, 22 percent zinc, in bags, works, freight allowed, less carlots, was quoted at $9.75 per 100 pounds at the beginning of the year and dropped to $7.70 at the year's end.

Foreign trade. - Imports and exports of lead and zinc pigments and zinc salts in 1952 were at much reduced rates from those for 1951. Imports (for consumption) of white lead and litharge declined from 2,575 tons and 1,855 tons, respectively, in 1951 to 390 tons and 621 tons, respectively, in 1952. Zinc oxide imports decreased from 1,782 tons to 173 tons and litharge imports dropped from 794 tons to 10 tons. Exports of lithopone and zinc oxide totaled 9,985 tons and 7,615 tons, respectively, in 1952 compared with 20,473 tons and 8,895 tons in 1951. Other significant items in foreign trade in 1952 (1951 totals shown in parentheses) were as follows: Exports of red lead, 435 (585) tons; white lead, 675 (767) tons; and litharge, 1,233 (1,038) tons; and imports of zinc chloride, 275 (714) tons. Figures on imports and exports are obtained from records of the United States Department of Commerce. Data covering the two chief classes of exports, by destination, are given in the following table.

Zinc oxide and lithopone exported from the United States in 1952, by principal countries, in short tons

Zinc oxide		Lithopone	
Argentina	240	Brazil	3,105
Brazil	1,257	Canada	2,589
Canada	655	Chile	333
Colombia	374	Colombia	118
Cuba	816	Cuba	387
France	738	France	173
India	1,177	India	353
Indonesia	265	Indonesia	183
Israel	130	Ireland	174
Japan	43	Israel	182
Mexico	100	Japan	71
New Zealand	211	Mexico	603
Netherlands	100	New Zealand	141
Norway	436	Philippines	310
Philippines	101	Portugal	144
Portugal	76	Union of South Africa	93
Switzerland	52	United Kingdom	235
Union of South Africa	184	Uruguay	121
Uruguay	133	Venezuela	260
Venezuela	165	Other countries	410
Other countries	362		
Total	7,615	Total	9,985

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DOUGLAS McKAY, Secretary J. J. FORBES, Director

FOR RELEASE MARCH 10, 1953

MINERAL MARKET REPORT
MMS NO. 2152

ROOFING GRANULES IN 1951

The production of roofing granules in 1951, as reported by producers to the Bureau of Mines, United States Department of the Interior, amounted to 1,614,779 short tons valued at $24,284,137, a decrease of 10 percent in both quantity and value compared with 1950. The average value showed an increase of 10 cents a short ton over 1950. The production of natural granules decreased 12 percent and artificially colored and brick combined 9 percent. The average value for natural granules dropped to $8.08, but artificially colored and brick granules increased to $17.57.

Production of roofing granules 1/ in the United States, 1947-51

Year	Natural			Artificially colored		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
1947....	504,980	$4,166,810	$8.25	1,133,870	$17,559,227	$15.49
1948....	448,150	3,828,307	8.54	1,002,430	16,563,351	16.52
1949....	352,846	3,088,402	8.75	977,934	16,489,253	16.86
1950....	489,794	4,312,531	8.80	1,294,275	22,276,565	17.21
1951....	430,235	3,474,385	8.08	2/ 1,184,544	2/ 20,809,752	17.57

Year	Brick			Total		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
1947....	56,570	$998,434	$17.65	1,695,420	$22,724,471	$13.40
1948....	35,110	586,173	16.70	1,485,690	20,977,831	14.12
1949....	23,425	400,919	17.12	1,354,205	19,978,574	14.75
1950....	13,660	263,752	19.31	1,797,729	26,852,848	14.94
1951....	(2/)	(2/)	(2/)	1,614,779	24,284,137	15.04

1/ Manufactured from stone, slate, slag, and brick.
2/ A small quantity of brick included with artificially-colored granules.

Prepared by Henry P. Chandler and Nan C. Jensen, under the supervision of G. W. Josephson, Chief, Construction and Chemical Materials Branch, Minerals Division.

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Washington, D. C.

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MINERAL MARKET REPORT MMS NO.2153
(Replaces December monthly report
No. 24)

TIN IN 1952
(PRELIMINARY ANNUAL FIGURES)

Total domestic consumption of tin decreased 18 percent in 1952, according to the Bureau of Mines, United States Department of the Interior. Preliminary figures for 1952 based upon monthly report Form NPAF-7 show the use of primary tin was 20 percent and of secondary 10 percent less than in 1951. Primary consumption was the lowest since 1943. Imports of metal nearly trebled and permitted a substantial tonnage to be added to the National stockpile. The total consumed in manufacturing in 1952 was 73,384 long tons (45,299 of primary - including 211 tons contained in copan produced by the Texas City smelter - and 28,085 of secondary). In 1951, tin consumption in manufacturing totaled 89,505 tons (56,884 was primary, 31,285 secondary, and 1,336 tons plant losses). Consumption was at its lowest rate during the second quarter, and at its highest during the last quarter. Total tin used in December was 6,965 long tons, an increase of 5 percent compared with 6,636 tons in November. Raw material imported in 1952 in the form of 94 percent tin and 6 percent lead or copper alloys, with an estimated total tin content of 6,100 long tons, has not been included in the figures. This was not under formal quantitative or allocation control. The supply of tin reached virtual balance with defense and essential civilian demand in 1952. Curbs on the use of tin were relaxed progressively by National Production Authority, by amendments to control Order M-8, on July 21, August 1, and December 30, 1952. Effective August 1, private firms were permitted to resume importing tin from suppliers of their own choosing. On August 26, the Defense Production Administration moved tin from List I, materials in short supply, to List II, materials in approximate balance. Allocation controls over pig tin were removed effective January 1, 1953. (On February 6, 1953 all controls over uses and inventories of tin were removed and announcement was made of the revocation of Orders M-8, M-24, M-25, M-26, and M-27, and amendment of Regulation 1, inventory provisions.)

Five items - tin plate, solder, bronze, babbitt and tinning - accounted for most of the tin consumed in 1951 and 1952. Tin platers, the largest consumers of primary tin, decreased their use 9 percent, but used 63 percent of the total primary in 1952 against 54 percent in 1951. A prolonged steel strike interrupted operations of most of the tin plate mills in June and July. Thereafter, their average monthly consumption increased and during the last five months of 1952 it was 17 percent above the average monthly rate for the whole of 1951. Solder, next in rank, required 21 percent less than in 1951, mainly by the substitution of a large tonnage of imported tin-base alloy for pig tin. Babbitt and tinning declined 25 and 18 percent respectively. In respect to total tin used, bronze maintained its position as the second largest consumer, but its total use decreased 4,300 tons. All other tin consuming products also recorded decreases in 1952.

Prepared March 4, 1953, by Abbott Renick and John B. Umhau, under the supervision of C. H. Johnson, Chief, Base Metals Branch, Minerals Division.

Tin stocks held by the Government (RFC) and industry - comprising pig tin, tin in ore, raw materials in process, and other but excluding the strategic stockpile and metal afloat enroute to the United States - increased from 40,448 long tons a the beginning of 1952 to 61,413 at the end. The progressive decline in industry stocks evident throughout 1951 and most of 1952 was halted after lifting of the ba on private importing. Industrial stocks of pig tin were at a low ebb during the first and third quarters, but they increased 2,948 long tons in the final quarter and totaled 12,728 tons December 31, 1952. It has been estimated that about 5,300 long tons of pig tin were afloat to the United States at the end of 1952.

Imports of metallic tin in 1952 totaled 80,457 long tons compared with 28,255 in 1951. Malaya was the principal source in 1952, furnishing 57 percent of the total. Other important sources of metal imported in 1952 include Netherlands (20 percent), United Kingdom (11 percent), Belgium-Belgian Congo (11 percent), and other (1 percent). Receipts were at their lowest rate in the first quarter and their highest in the second. Under the United States-United Kingdom mutual assistance agreement of January 1952, the United States acquired 20,000 long tons of tin, most of which was grade A quality at $1.18 per pound f.o.b. foreign port of delivery. Receipts of ore in terms of metal were 11 percent less than in 1951, principally owing to a decrease of 42 percent in imports from Indonesia. Bolivia, the main source of tin ore (accounting for 48 percent of the total) furnished 12,639 tons in 1952, or 3 percent less than in 1951. Ore and metal imports were augmented by 7,711 long tons (gross weight - chief value tin) of alloys brought into the country in 1952, mainly from the Netherlands in the form of 94-percent tin alloy. Imports for consumption of this class were 230 tons in December, compared with 649 in November 1952. Exports of metallic tin in 1952 were 380 long tons with Canada as the destination of most of it.

The Government-owned Longhorn smelter at Texas City, Texas, produced 22,802 long tons of tin, including the tin content of Copan. The output of the smelter was the smallest since 1943 due to shortage of ore and complete shutdown for two-and-a-half months by a strike. In November, 1952, production was 4,020 long tons of 3-Star from concentrates, the highest recorded for any month by the plant. In December the plant produced 3,705 long tons of 3-Star from concentrates and upgraded 45 tons of 1-Star to 3-Star. At the close of 1952 concentrates at foreign ports, afloat, in storage or in transit in the United States, at smelter and in process contained 25,209 long tons of tin. Domestic mine production of tin was again insignificant; only 100 long tons of tin were produced in 1952 compared with 88 tons in 1951.

The selling price of tin was maintained by the Reconstruction Finance Corporation at $1.03 a pound from August 1, 1951, to January 21, 1952. As a result of the British agreement announced at the White House on January 18, 1952, the price was raised to $1.215 on January 22, at which level the RFC price for resale remained for the rest of 1952. The RFC price averaged $1.20519 for 1952. The RFC was the sole importer of tin from March 12, 1951 until resumption of private importing for resale was permitted on August 1, 1952 when the outside market reopened. The outside market for prompt tin was nominal until August 11 when the price was first quoted at $1.21 a pound. The five-month average from August through December was $1.21305. The monthly average price on the open market ranged from $1.21152 in August to $1.21472 in December, 1952. The lowest price for the year on the outside market was $1.2075 on October 16. Effective September 12, 1952, Office of Price Stabilization established a ceiling price on tin of $1.215 a pound f.o.b. New York. (On February 13, 1953, OPS issued a sweeping decontrol order which removed the ceiling price on tin).

World mine production of tin increased in 1952. Preliminary figures show that the total output was 172,500 long tons compared with 169,600 in 1951. In 1952 the tin fields of Malaya accounted for 33 percent of the total, Indonesia 20 percent, Bolivia 20 percent, Belgian Congo 8 percent, Thailand (Siam) 5 percent, Nigeria 5 percent, and all the remaining sources 9 percent.

Consumption of primary and secondary tin in the United States in 1951 and 1952, in long tons

Industrial plants	1951	1952					
		January-September	October	November	December	October-December	Total
Stocks beginning of period	31,856	20,764	18,408	19,745	19,826	18,408	20,764
Receipts	81,139	52,107	8,807	6,955	9,348	25,110	77,217
Supply	112,995	72,871	27,215	26,700	29,174	43,518	97,981
Stocks at end of period	20,764	18,408	19,745	19,826	21,901	21,901	21,901
Total processed	92,231	54,463	7,470	6,874	7,273	21,617	76,080
Intercompany scrap transactions	2,726	1,941	209	238	308	755	2,696
Consumed in manufacturing	89,505	52,522	7,261	6,636	6,965	20,862	73,384
Primary	56,884	31,780	4,709	4,311	4,499	13,519	45,299
Secondary	31,285	20,742	2,552	2,325	2,466	7,343	28,085
Plant losses	1,336	1/	1/	1/	1/	1/	1/

1/ Not separately reported.

Consumption of tin in the United States in 1951 and 1952, by finished products, in long tons of contained tin

	1951			1952 1/		
	Primary	Secondary	Total	Primary 2/	Secondary 2/	Total
Tin & terneplate	30,606	683	31,289	28,356	187	28,543
Solder	13,066	6,744	19,810	8,763	6,940	15,703
Babbitt	2,493	3,360	5,853	2,097	2,282	4,379
Brass & bronze	4,838	16,934	21,772	3,841	13,631	17,472
Collapsible tubes & foil	832	208	1,040	628	73	701
Tinning	2,431	277	2,708	2,224	--	2,224
Pipe & tubing	133	94	227	102	81	183
Type metal	120	1,694	1,814	80	1,643	1,723
Chemicals including tin oxide	374	826	1,200	556	457	1,013
Copan	592	--	592	211	--	211
Miscellaneous	1,399	465	1,864	1,120	112	1,232
Sub-total	56,884	31,285	88,169	47,978	25,406	73,384
Secondary pig tin 2/	--	--	--	-2,679	2,679	--
Total	56,884	31,285	88,169	45,299	28,085	73,384

1/ Preliminary figures

2/ Distribution of primary includes secondary not separable by uses; adjustment made in total.

Consumption of tin in the United States in 1952,
by finished products, in long tons of contained tin

	1952														
	January-September			October			November			December			October-December		
	Primary	Secondary	Total	Primary 1/	Secondary 1/	Total	Primary 1/	Secondary 1/	Total	Primary 1/	Secondary 1/	Total	Primary 1/	Secondary 1/	Total
Tin & Terneplate	19,575	130	19,705	3,018	21	3,039	2,754	17	2,771	3,009	19	3,028	8,781	57	8,838
Solder	6,057	5,120	11,177	920	664	1,584	858	552	1,410	928	604	1,532	2,706	1,820	4,526
Babbitt	1,499	1,702	3,201	210	209	419	190	187	377	198	184	382	598	580	1,178
Brass & bronze	2,957	10,114	13,071	311	1,222	1,533	275	1,176	1,451	298	1,119	1,417	884	3,517	4,401
Collapsible tubes & foil	431	53	484	63	9	72	71	9	80	63	2	65	197	20	217
Tinning	1,626	--	1,626	194	--	194	202	--	202	202	--	202	598	--	598
Pipe & tubing	79	58	137	8	7	15	8	9	17	7	7	14	23	23	46
Type metal	63	1,212	1,275	5	135	140	6	136	142	6	160	166	17	431	448
Chemicals incl. tin oxide	430	339	769	85	29	114	37	43	80	4	46	50	126	118	244
Copan	190	--	190	21	--	21	--	--	--	--	--	--	21	--	21
Miscellaneous	792	95	887	122	8	130	100	6	106	106	3	109	328	17	345
Sub-total	33,699	18,823	52,522	4,957	2,304	7,261	4,501	2,135	6,636	4,821	2,144	6,965	14,279	6,583	20,862
Secondary pig tin 1/	-1,919	1,919	--	-248	248	--	-190	190	--	-322	322	--	-760	760	--
Total	31,780	20,742	52,522	4,709	2,552	7,261	4,311	2,325	6,636	4,499	2,466	6,965	13,519	7,343	20,862

1/ Distribution of primary includes secondary not separable by uses; adjustment made in total.

Tin stocks in the United States at the end of 1951 and selected periods in 1952, in long tons

	1951	1952				
		March	June	September	November	December
Grand total	40,448	37,853	58,837	61,165	61,151	61,413
Industry total	21,817	20,216	21,177	20,257	21,000	22,939
At plants - total	20,764	19,086	20,215	18,408	19,826	21,901
Pig tin	10,384	8,124	9,464	7,931	9,488	11,690
In process	10,380	10,962	10,751	10,477	10,338	10,211
Other pig tin - total	1,053	1,130	962	1,849	1,174	1,038
In transit in U. S.	971	1,011	923	1,486	1,093	507
Jobbers - importers	82	119	39	363	81	531
Government (RFC) - total	18,631	17,637	37,660	40,908	40,151	38,474
Pig tin	6,753	9,004	15,904	15,534	13,659	13,265
Ores - total (tin content)	11,878	8,633	21,756	25,374	26,492	25,209
In foreign ports or afloat	1,107	1,007	13,571	11,454	12,656	11,868
In U. S.	10,771	7,626	8,185	13,920	13,836	13,341

Pig tin and copan production in the United States in 1951 and 1952, in long tons

	1951	1952					
		January-September	October	November	December	October-December	Total
Pig tin							
Texas City Smelter	31,526	11,502	3,364	4,020	3,705	11,089	22,591
Secondary plants	3,690	1,919	248	190	322	760	2,679
Copan	700	226	25	--	--	25	251

Tin imported for consumption in the United States and exported in 1951 and 1952, by countries, in long tons 1/

	1951 2/	1952					
		January-September	October	November	December	October-December	Total
Imports							
Ore (tin content)							
Belgian Congo	1,585	1,192	--	--	--	--	1,192
Bolivia	13,085	6,432	2,545	1,596	2,066	6,207	12,639
Indonesia	11,684	4,178	1,634	507	438	2,579	6,757
Siam	3,114	3,624	590	--	677	1,267	4,891
Other	153	742	100	74	96	270	1,012
Total	29,621	16,168	4,869	2,177	3,277	10,323	26,491
Metal							
Belgian Congo	915	1,125	--	--	150	150	1,275
Belgium	5,501	6,025	660	400	445	1,505	7,530
China	55	--	--	--	--	--	--
Malaya	6,986	33,437	3,853	3,525	5,076	12,454	45,891
Netherlands	12,837	12,420	1,510	1,354	1,091	3,955	16,375
United Kingdom	1,846	7,224	834	569	303	1,706	8,930
Other	115	303	26	12	115	153	456
Total	28,255	60,534	6,883	5,860	7,180	19,923	80,457
Exports (metal)	1,513	198	20	139	23	182	380

1/ Compiled from records of the U. S. Department of Commerce

2/ Revised figures.

Alloys, chief value tin - n.s.p.f.
(including alloy scrap)
imported for consumption in the United States in 1952,
in long tons 1/

Countries of Origin	Gross Weight
Belgium-Luxembourg	300
Denmark	125
France	137
Italy.	50
Netherlands.	5,806
United Kingdom	386
West Germany	804
Other.	103
Total	7,711

1/ Compiled from records of the U. S. Department of Commerce.

World mine production of tin (content of ore), by countries
in 1951 and 1952, in long tons 1/

Country	1951	1952
Malaya	57,168	56,837
Indonesia	30,986	35,003
Thailand	9,502	9,473
Nigeria.	8,529	8,270
Belgian Congo.	13,669	13,320
Bolivia.	33,130	34,800
Others	16,616	14,797
Total.	169,600	172,500

1/ Preliminary - partly estimated.